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Application of Electric Motors to the Pulp and Paper Industry

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This is the first of a series of articles, the purpose of which is to show as nearly as possible the power requirements of the various branches and departments of the pulp and paper industry, and the types of motors best adapted for each. In an industry which is expanding at the rate the pulp and paper industry is, it is not an easy matter to compile a set of data which will cover all instances, but for the greater number of applications, the figures given will be found to closely approximate those required for present day practice, and when compared with those of a decade ago, will show a vast difference.
—Author.

PROBABLY no industry offers a greater diversity of motor drive applications than the pulp and paper industry. It is very improbable that there is a motor at present manufactured, or which will in the future be designed, that will not fit in somewhere in this vast and fast increasing industry. With the exception of the paper machine drives, alternating current motors of the various types are better suited to the operating conditions, mainly on account of their rugged construction, low first cost, low cost of maintenance, and lower distribution costs.

All of the alternating types, operating on voltages from 110 to 4500 volts, and all of the direct current types, operating on voltages up to 250 volts, and in some cases, 500 volts are adaptable on some application in this industry.

Group vs. Individual Drive

The choice of group drive over individual drive and vice versa rests entirely on local conditions. For pumps of various kinds, individual drive seems to be the better of the two, since with most centrifugal pumps, the motor is directly coupled to the pump. For the constant line equipment of paper machines, group drive has its advantages, since the paper machine depends on every unit of the drive, and if one of them shuts down, the whole machine is affected. With machines assembled so that they can be served by a short line shaft and all machines run continuously, group drive has its advantages not only in lesser maintenance but in a more compact installation, but where the various machines of any group are not required constantly, or where there is a diversity of operation, individual drive has greater advantages. It is quite often more feasible to drive two or three machines which must work together from one motor, and thus split an otherwise group drive into two or more smaller group drives. Another application where group drive is advantageous is where several machines of the same type are all required to run at the same time, but their respective loads vary. In a case of this kind, one motor rated much lower than the total rating of the individual motors may be used. Its load, however, may exceed its normal full load rating for short intervals. Apart from the cases specifically stated, individual drive should be resorted to as far as possible.

Motor Types Most Suitable for a Given Application

A motor for a given application should always be chosen on its characteristics. Among the many characteristics and their application, the following are of the greater importance: high starting torque, high pull-in torque, high pull-out torque, high speed, slow speed, constant speed, variable speed, reversibility, high power factor, low starting current, dynamic braking, slow acceleration, fast acceleration, efficiency, etc.

It is seldom that more than three or four of the above characteristics may be required of a given

motor. Of the torque characteristics, a given motor will hardly have the three, nor are the three high values desired in one motor, since a motor having a high starting torque and a high pull-out torque does not require a high pull-in torque.

A synchronous motor may have a high pull-in torque, a high pull-out torque, a slow constant speed, high power factor and high efficiency with a fairly low starting current, and can be equipped for dynamic braking.

Induction motors operate at lagging power factor, and the lower the speed, the lower the power factor. Induction motors possess certain characteristics however that adapt them to some applications better than synchronous motors, among these being their high starting torque, and ruggedness, and the ease with which their design may be changed to meet changed conditions.

A direct current motor may have a low starting current, either a fast or slow acceleration, a great many speed ranges with constant speed at each step, be reversible and able to operate with the same load at any speed either forward or reverse, and be equipped for dynamic braking.

Owing to the many factors entering into the manufacture of pulp and paper, motors must be designed to meet these factors. There are applications where it is necessary to totally enclose the windings, others where nothing but ball bearings will answer, and again others where ball bearings are not adaptable. In order to conserve space and cover the various applications without repeating, each mill department will be treated separately.

Motors for Wood Handling Equipment

Wood handling equipment consists of saws, barking drums, hand barkers, conveyors, stackers, chippers, screens, etc.

Saws—For stationary and portable saws, low speed squirrel cage induction motors are well adapted. The power taken by a saw depends entirely on the shape the saw is in, a dull saw requiring considerable more power than a sharp, true one. Saws are usually staggered and gang driven from one motor, thus requiring a motor for operating a gang of three saws slightly in excess of that required to operate one saw.

A gang of three six foot saws arranged as illustrated in Fig. 1, and cutting 16 foot logs requires a 75 hp. motor. The same motor also drives the jackladder and the log deck. The average power consumption is 45 hp., but the load is subject to sudden peaks and the power may reach as high as 90 hp. for short intervals. A mill of this size can easily handle 300 cords of wood in 20 hours.

Wood Conveyors—Chain conveyors require approximately .060 hp. per foot per strand when travelling 100 feet per minute. This figure is for the actual length of the conveyor and not the length of chain, which is a trifle greater than twice the length of the conveyor. A typical 4-strand conveyor, 200 feet long (1600 feet of chain), at 120 feet per minute requires a 60 hp. motor, or .075 hp. per foot per strand, or .3 hp. per foot of conveyor.

A cable conveyor with buttons spaced on 4.5 foot centers requires approximately .80 hp. per foot of

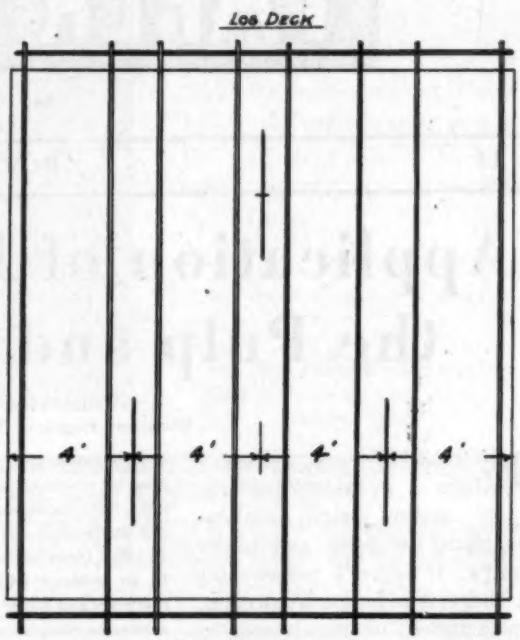

Figure 1

conveyor at 120 feet per minute. The above figures are for straight horizontal conveyors.

Stackers—Stackers or inclined conveyors require .1 to .125 hp. per foot of conveyor, the first figure being for 30 degrees, the latter for 45 degrees from the horizontal plane, at 100 feet per minute.

On all classes of chain and cable conveyors and stackers, doubling the speed increases the horsepower input approximately four times.

High torque squirrel cage induction motors are recommended for this type of duty owing to the heavy drag when starting. These motors should all be equipped for across the line, full automatic starting and stopping, and all portable conveyors motors should be equipped with ball bearings.

Chip Conveyors—Chip conveyors, consisting of rubber belting of from 20-inch to 24-inch width, travelling from 200 to 250 feet per minute require .045 hp. per foot horizontal, and from .06 to .08 hp. per foot on the incline.

High torque squirrel cage induction motors are recommended for this duty.

Barkers—A 10-ft. diameter, 30-ft. long drum barker revolving at 7 r.p.m. requires 60 hp., while a 12-ft. x 45-ft. drum barker requires 125 hp. The latter barker has a capacity of 100 cords of four-foot wood per 10 hours.

Drum barkers should preferably be belt driven,

and by a wound rotor motor, although if the drum is equipped with a clutch, a squirrel cage induction motor will answer the purpose.

A 5-ft. hand barker requires a 10 hp. motor. The maximum power required is approximately 11 hp., while the minimum is 5-hp. A squirrel cage induction motor at 600 r.p.m., direct connected to the barker, is recommended for this application.

Chippers—A 5-ft. chipper requires 75 hp., and for every foot diameter over 5 feet, 25 additional horsepower is required. A chipper requires a high torque motor, either squirrel cage or synchronous, and may either be direct connected, or belt driven. The load is fluctuating and subject to sudden peaks, and the average power required for a 5-ft. chipper varies from 75 to 85 hp., depending on the diameter of the wood. The speed of the chipper seldom exceeds 300 r.p.m.

In addition to the foregoing applications, the duties of motors in the handling and preparation of the wood comprise chip screens and crushers, one of each being required for a 50-ton mill.

The total power requirements for the handling and preparation of the wood for the various pulp mills in connection with a paper mill depends on the manner in which the wood is prepared. Most pulp and paper manufacturers locate their mills where the bulk of the wood can be rafted and stored in storage piles against the time that the lakes and rivers are frozen over. This applies only to those inland, and not where the mill is situated on tide water, where storage piles are not so essential. Where the mill is inland, the power requirements for handling the wood for a 100-ton paper mill will approximate 950 hp. summer connected load, and 800 hp. winter connected load. The average power consumption for summer is 750 hp., while the average winter power consumption is 635 hp. It is safe to figure 7.5 hp. per ton of paper in estimating the actual power requirements, and 9.5 hp. for the connected load requirements for wood handling and preparation alone. The above figures are compiled from the average requirements of three mills, there being practically no difference between them. The total number of motors from which the foregoing figures were compiled was 27 summer load, and 25 winter load.

Groundwood Mill Equipment Motors

The equipment of a groundwood mill consists principally of the grinders, flat and centrifugal screens, and pumps.

Grinders—Several formulae have been devised for figuring the horse-power required to grind wood, most of them being more or less unreliable. From several tests taken at various water pressures, and different sized pockets, and under varying speeds, sizes of stones, and number of pockets, the writer has devised a formulae that seems to bear out the tests made, and the horsepower required. The formulae used is

$$HP. = \frac{P \times A \times K \times N \times S \times D \times 3.1416}{33000 \times 12 \times 1.44}$$

where P = water pressure in lbs. per sq. in. at the cylinders.
A = area of the cylinder in sq. in.
K = the coefficient of grinding friction. (average value 0.215)
N = number of pockets per grinder used.
S = speed of stone in r.p.m.
D = diameter of stone.

Taking a concrete example:

Two 3-pocket grinders connected in line, having 54-in. by 27-in. stones travelling 240 r.p.m., with 16 in. cylinders, and a water pressure of 76 lbs. per sq. in. require:

$$HP. = \frac{76 \times (16^2 \times .7854) \times .215 \times 6 \times 240 \times 54 \times 3.1416}{33000 \times 12 \times 1.44} = 1406.99$$

or a 1400 hp. motor. The following table shows the horsepower tests on two 3-pocket grinders direct connected to a 700 kv.a. synchronous motor at various values of power factor and efficiencies. The pull-out torque was 37,200 pounds, showing that the motor would stall at 1700 horsepower.

Load Tests on Two Three-Pocket Grinders Direct Connected to a 700 kv.a. Synchronous Motor

No. of pockets	Amps.	Excitati'n amps.	Volts	Eff.	P. F.	H. P
2	320	32	575	.86	unity	367.5
2	500	56	585	.87	.90	532
2	600	66	580	.85	.707	534
2	620	62	585	.88	.89	662
3	980	69	590	.89	.87	1042
4	1050	68	590	.87	.91	1142
5	1100	68	590	.86	.94	1222
6	1150	68	590	.85	.96	1280
6	1200	68	590	.84	.97	1345
6	1250	68	590	.83	.99	1410
6	1500	68	590	.81	unity	1662

Water pressure on all tests = 83 lbs. per sq. inch.

Table 1

The power consumption of a grinder motor increases or decreases in direct proportion to the speed and water pressure. Either wound rotor induction or synchronous motors are adaptable for grinder service, the latter being the better of the two, and consequently used more, owing to the fact that a synchronous motor operates at a higher power factor than a wound rotor motor. The usual speeds are 240 and 250 r.p.m., the first for 60 cycle motors, the latter for 25 cycle motors.

The usual methods of driving grinders is to have one motor for one 4-pocket grinder, one motor for two 3-pocket grinders, and one motor for four 3-pocket grinders, where the pocket type are used. A 4-pocket grinder requires an 800 hp. wound rotor motor, or a 600 kv. a. synchronous motor. The maximum power required is 1050 hp. at 85 lbs. water pressure, but since only three pockets are grinding while one is being charged, the four pockets are only on for a few moments at a time. Where four 3-pocket grinders are connected in a line, a 2800 hp. motor is generally used. For magazine grinders, the usual practice is a 2800 hp. drive. The voltage used on grinder motors is usually either 2200 or 4500 volts, although in some cases 550 is used.

The horsepower per ton of production varies be-

tween pocket and magazine grinders as the feed on magazine grinders is continuous, while on pocket grinders, the feed is intermittent. The horsepower varies on any grinder as to the pressure and freeness of stock. For magazine grinders, producing pulp for newsprint, the horsepower per ton may be as low

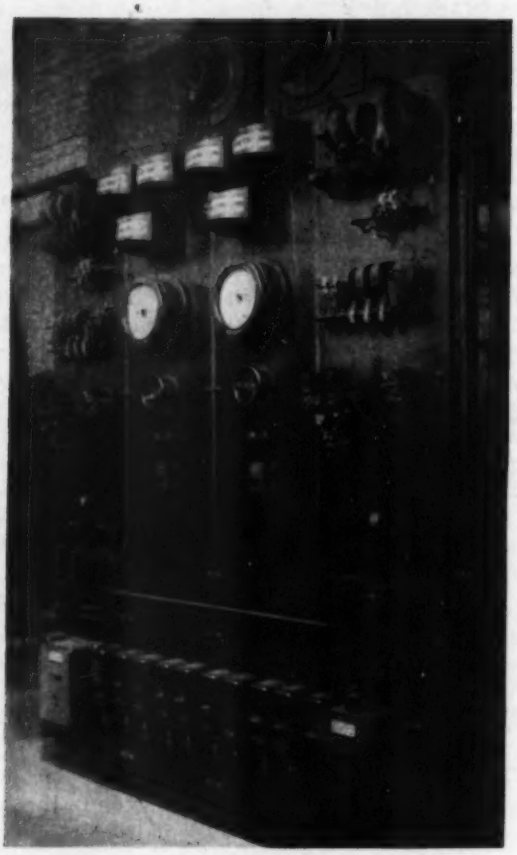

Figure 2

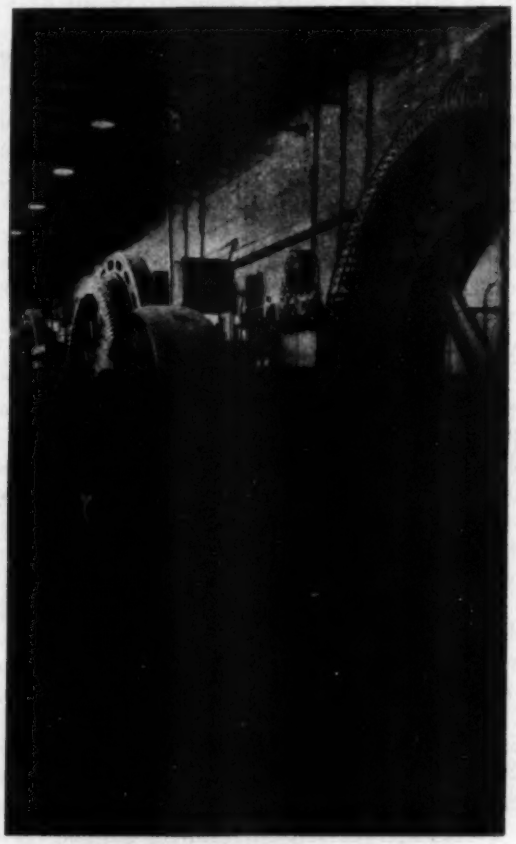

Figure 3

as 65 and as high as 75 hp., the average being around 70 hp. per ton. Pocket grinders require from 45 to 60 hp., a good average figure being 55 hp. per ton. The average for a 60-ton mill, for a period of four years was 52.49 hp. per ton. The above figures are for the actual grinding, and do not take into consideration any pumps or other equipment.

The latest practice where grinders are driven by synchronous motors is full automatic control; that is, the motor is started and stopped with push buttons. Either full voltage or reduced voltage may be applied to the motor windings, and excitation of the motor fields is applied automatically at the proper time and value of the current. Fig. 2 shows the panels for full voltage, or across the line control of two 1400 hp. synchronous motors, while Fig. 3 shows the bus structure and motors.

Screens—Centrifugal screens, including the deckers and washers for a 60-ton mill require approximately 150 hp. for No. 1 stock and 35 hp. for No. 2 stock; a 20-ton centrifugal screen with its deckers thus requiring a 50 hp. motor. It is best to have each screen and its deckers operated from an individual motor, in which case a squirrel cage motor may be used. Where several screens are driven from a line shaft by one motor, a wound rotor motor should be used. The usual speeds of motors driving centrifugal screens are from 500 to 720 r.p.m. The actual ratings of motors for this particular duty is around 3.5 hp. per ton, while the average power required is 3.34 hp. per ton.

Flat screens require approximately ¼ hp. per plate for line shaft drive, and ⅓ hp. per plate for individual drive.

Bull screens of 60 tons capacity per 24 hours require from 3 to 5 hp.

Refiners—A refiner for refining groundwood requires approximately 30 hp. per ton. The actual rating of a refiner motor for a 60-ton mill is only 1.67 hp. per ton, while the average power requirement is 1.25 hp. per ton.

Pumps—The pumps of a groundwood mill consist of pressure pumps, stock pumps, bull screen pumps, tailings pumps, and white water pumps. The number of pumps will depend on the number of grinders, the number of grades of stock, and the distribution of

the stock. The formulae for determining the rating of centrifugal pump motors is:

$$\text{Brake horsepower} = \frac{\text{G.P.M.} \times H}{3960 \times \text{eff.}}$$

where G.P.M. = gallons per min.
H = total head in feet.
eff. = efficiency of the pump.

Following are the averages of several pump tests in a 60-ton groundwood mill:

Duty of pump.	Motor ratings	HP. per ton	Ave. HP.	HP. per ton
Bull screen pumps.	100 hp.	1.67	75	1.25
Stock pumps. (including tailings)	95 "	1.58	75	1.25
Pressure pumps. (76 lbs. per sq. in.)	50 "	0.83	45	0.75
White water pumps.	60 "	1.00	55	0.92

Total Power Requirements for a Groundwood Mill

The total power required for a groundwood mill employing pocket grinders varies from 55 to 70 hp. per ton capacity, and from 75 to 85 hp. per ton for a mill equipped with magazine grinders. For the actual ratings of the motors, these figures should be increased. Ten per cent added to the average in each case will give fairly reliable figures for estimating purposes. Thus, for a pocket grinder mill, the safe figure is 55+70÷2+10%=68.75 hp. per ton, and for a magazine grinder mill, 75+85÷2+10%=88 hp. per ton.

With the exception of the grinder motors, and possibly the screen motors, if line shaft driven, all the remaining motors may be of the squirrel cage induction type. There is no place in an up-to-date groundwood mill where the motors are subjected to severe operating conditions, and with the exception of some of the pump motors that might require metal hoods, no special precautions are needed in protecting the motors and control equipment. As shown in Fig. 3, the grinder motors are usually situated in a separate room from the grinders and other equipment.

Paper Looks to Arbitration

By S. L. WILLSON
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President, American Writing Paper Company

THE adoption of arbitration to supersede litigation as the method of settling commercial disputes in the paper and pulp industry is expected to result from negotiations now in progress between the American Arbitration Association and responsible organizations representing the producing, manufacturing and purchasing groups of the industry.

A properly prepared arbitration clause inserted in their contracts automatically makes available the facilities of the American Arbitration Association for settling business controversies between paper men or a paper man and his customer or manufacturer when those arise, and which are not otherwise settled. Recourse to the National Panel of Arbitrators of the Association of 7,000, located in 1,700 commercial centers of the country, assures disputants of a settlement speedily and amicably by experts of the industry. Arbitration spares the parties publicity and its attendant unfavorable reflection on their credit standing. The costs of this mode of settlement are nominal, almost negligible in view of the benefits accrued.

Legally recognized as a method of settling the differences which arise between business men, arbitration permits parties to a controversy to submit it to a third impartial person or persons who hear the story of each side, consider the evidence presented by each, and upon the respective merits of the claims make an award. When confirmed by an appropriate court, this award is as final and binding upon the parties as a court judgment. There can be no appeal upon the merits of the case made from the decision.

Disputes may be submitted to arbitration whether or not provision has been made in advance for that method of settlement, by the parties mutually agreeing to submit an existing controversy to arbitration.

When the standard arbitration clause of the American Arbitration Association is incorporated in the contract, and a dispute arises thereunder, either party has only to notify the association which will take steps toward bringing arbitration machinery into action. The complaining party is called upon to state briefly the nature of the controversy and the question at issue. The association then informs the defendant party concerning the claim against him. It provides each party with a list of six or more impartial arbitrators best qualified to serve, from which a mutual selection, or selections, is made. When one party declines or fails to agree upon an arbitrator, the association, under its rules, proceeds with the case by designating that arbitrator.

The time and place for the hearing are set to suit the convenience of the parties and the arbitrator who serves without compensation. In the event that one party fails to agree as to the time and place, the association is empowered to give notice of the hearing and proceed with it. If the negligent party does not appear, having had notice, the arbitrator may hear the case of the party present and make a legally binding award in this ex-parte proceeding.

In the presentation of the case, legal rules of evidence need not apply, but an arbitrator may question either party to establish facts pertinent to the case. In his discretion he may exclude impertinent evidence. The parties are encouraged to state their cases in their own way, but if a party wishes to employ legal counsel to present his claim he may do so by notifying the association three days in advance of the hearing thus enabling the other party to appear with counsel if he so wishes.

After hearing the evidence offered by both parties, the arbitrator has twenty days in which to review it and apply his expert knowledge of trade customs and practices which may be involved in the case in order to arrive at an equitable award based on its merits. When this award is put into writing and acknowledged before a notary it is final and binding so far as it concerns his decision on the merits of the claims. At each hearing conducted by the association, one of its technical experts is present to insure the conduct of the hearings in accordance with the association rules.

Provision in a written contract to settle by arbitration any disputes which may later arise out of the contract is binding upon both parties under the Federal Arbitration Act and the laws of ten states—New York, Pennsylvania, New Jersey, Connecticut, Massachusetts, Rhode Island, New Hampshire, California, Arizona and Louisiana. When disputes arise out of a contract not providing for compulsory arbitration, the disputants may submit that dispute to arbitration and in accordance with the laws of thiry-four other states, it is generally as legally binding as a clause in a contract.

The following is the "Standard Arbitration Clause" recommended by the American Arbitration Association:

> "Any controversy or claim arising out of or relating to this contract or for the breach thereof, shall be settled by arbitration under the Rules of the American Arbitration Association and judgment may be entered on the award in any court having jurisdiction."

The adoption of the arbitration clause for use by producers, manufacturers and purchasers employing contracts in the paper and pulp industry would be an advancement in ethical practice of the industry—a step which has been taken in principle or in practice by some 400 other associations representing other trades and industries.

Cost Accounting in the Paper Industry

Part XI—Formation and Use of a Budget (Cont'd)

By D. A. WILCOX
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HAVING prepared the sales budget, which is the backbone of the whole system, the entire objective of the budget is to plan how to secure the greatest profit from the projected volume of sales. With this in mind each department head is advised of the sales and required to submit estimates or plans how best to accomplish his own operations to fit in with the general scheme. Given the sales in tons by grades and months, the production department will be called upon to submit estimates as to requirements for raw materials, coal, power, labor, etc., all along the line. In doing this the department heads must take into consideration not only the fluctuations due to the sales themselves, but also seasonal conditions and the effect of outside temperatures on coal usage and the like. Such estimates will of necessity be rather general as they are projected into the future, but will be more and more exact as the time approaches until the estimates for the next month or so may be considered quite exact and reliable for the purpose of control.

All Departments Aid

Similarly other departments will be furnished with information necessary to their operation—the sales department will be told the exact tonnage they are expected to dispose of and they in turn will submit their plans to handle it. Advertising will be planned to assist in this work. The purchasing department will submit estimates of the cost of raw materials and supplies required and the transportation department will submit their estimates of freight cash requirements; even the office manager should submit his budget showing the probable expense of operating the office. All these estimates will be turned in to the budgetary officer who will combine them into one complete plan for submission to the budgetary committee. In the course of preparing the estimates there will necessarily be many consultations and conferences between interlocking departments, such as the production and purchasing departments, etc., and the budgetary officer should give freely of his help.

The Budget in the Mill

Let us consider in some detail the work entailed by the production department. The sales have been submitted calling for so many tons of this grade; so many of another, and so on, for each month's requirements. Their first step will be, of course, to subject the whole to a general inspection in order to

ascertain how it can be fitted into a production schedule most economically. It may be that, were the production schedule to follow the sales schedule exactly, quite uneconomical practice would result, as for example, in some months it would be necessary to shut down partially and in other months to work overtime. Obviously, if this can be avoided by storing during the low months, the peaks can be evened out and a more uniform production schedule be arranged. It may be that certain grades will be called for in small amounts each month and it will be profitable to make up the entire period's requirements at one run. Until the sales budget becomes quite scientific and considerable reliance can be put on it, it would, of course, be unwise to carry this policy too far. It is for this reason that a research into business forecasting which permits of scientific budgeting of sales is of value, because it allows the management to prepare production schedules well in advance, so as to take advantage of all possible economies in bunching similar orders, such as mass production of grades with a minimum of changes and reduction of inventories.

In any event, the sales budget is recast so far as practicable to make up the production schedule. With this in hand the schedule is again broken up among the various centers and each individual foreman called on for his requirements.

Estimates of Raw Materials

To accomplish this, the production schedule is analyzed for the raw material requirements. This is, unfortunately, a more difficult problem than appears at first glance. Let it be assumed, that in a certain month the mill will be called upon to make 100 tons of a certain bond, the formula for which is as follows:

	Lb. Per Beater.
Bleached sulphite	600
Hard broke	400
Soda pulp	400
Clay	200
Alum	80
Size	20
	1,700

Unless there is a completely closed system in which there is no loss of stock, and all the machine and finishing room broke of this particular paper goes back to the same grade, we certainly cannot say that it will take 600 lbs. of sulphite per 1,700 lbs. of paper and so on. We must make allowance for loss of stock and interchange of materials in the white water and broke and herein comes our first problem of securing past performances and detailed records as guides. The chances are that in the beginning we shall have to lump the tonnage together and use average figures in determining our requirements, being guided to some extent by judgment, knowing the grades to be made.

We see now the necessity for laying the foundation for analysing cause and effect so that we may judge from the character of the papers to be made, the probable pulp and other materials that will be used. Until we have this information we must be satisfied with the generality that on the average, 100 tons of paper require 35 tons of sulphite, 35 of soda, etc., but, that as this is a high sulphite paper, we may expect to use, say, 50 tons sulphite, 20 soda and 15 tons of clay.

The better our past records are, the closer we can come to our exact requirements.

Having worked out our requirements of materials we then compare them with our own productive capacities. This month will call for 2,000 tons of sulphite, the next one 1,500 tons, and so on. These again are rearranged into production schedules for the pulp mills for their best operation and submitted to the pulp mill foremen for their guidance.

Conversion Estimates

In a sense the matter of conversion is more direct and simple. Each foreman is given a production schedule for his own department and asked how much labor, materials and ordinary repairs will be required to meet it. Basing his requirements on past experience, or records if available, he will submit his estimate.

Having secured the various estimates, the mill management proceeds to study ways and means to see how they may be reduced and if this is possible how economies can be effected. They may consider it advisable to build or place new equipment, and this then goes into the plant construction budget. All this is done, of course, by many conferences with the individual foremen until a final estimate is made showing the total material requirements, month by month, the necessary cash requirements for labor, supplies, repairs and plant extensions, etc. It is all submitted in turn to the budgetary officer for his inspection.

Financial Statements

After the estimates of sales have been settled upon and the cash requirements received from the production department, the purchasing department and others, they are turned over to the accounting department where the tentative profit and loss statements, balance sheets and other financial reports for the entire budget period are made up in advance, to show the expected standing of the company. This, together with the other departmental estimates, is combined into a complete tentative budget by the budgetary officer and submitted to the budget committee.

Action of Budget Committee

The budget committee goes over the tentative budget in detail. Beginning with the sales, which are carefully considered as to their reasonableness,

they proceed to consider the profit and loss statements and other financial statements. If these prove to be unsatisfactory they start to consider ways and means of improving them. Ratios may be used, as the percentage of each important element like mill cost, distribution, advertising, administrative expense, etc., on to the gross sales as 100. Charts showing trends of sales prices, costs and the like are considered. The budgeted ratios are compared with past performances in the light of the trend and these may all give clues as to how expenses may be reduced or profits increased. As a result of all this, definite recommendations are adopted, such as changes in the character of the sales reductions necessitated in mill costs, etc. It is obvious that if the sales cannot be changed, either in volume or character, expenses must be cut. The mill manager may be notified that his projected costs are too high and that reductions are necessary. Other departments may similarly be asked to reduce expenses, or it may be that the sales can be revised. All of this involves careful study of the situation, which being done by the budgetary committee and participated in by all principal departments through their respective heads cannot fail to produce beneficial results. Whether or not the suggested improvements can be obtained, there at least will be more team work and less working at cross purposes; each department will have a better understanding of what the company is up against and have a more serious desire to do its share.

Revising the Estimates

When the budgetary officer receives the recommendations of the committee, he transmits them accordingly to the various officials concerned with the request to revise their estimates. This should be done personally, if possible, or by letter explaining the reasons for the requested changes. As the head of the department concerned was present in the committee and concurred in the recommendation, he, of course, supplements the efforts of the budgetary officer and between them all an effort is made to revise the budget in such manner as to show the improvements desired.

It may be said that this is not fair to the departments; that the original estimates submitted by them would naturally be as efficient as possible but this is hardly ever the case. Usually men like to "play safe" and allow themselves some leeway. They would rather have the final results show better than they predicted, rather than worse. Or they feel that their estimates will probably be cut and believe they had better make allowance for this, with the result that when put together much of the profit is absorbed and cuts are necessary. It is truly remarkable how costs may be reduced if the people see they are really essential. I recall one case in another industry in which a factory manager was advised that on the showing of his budget, his mill would net a loss for the ensuing year and that he must reduce costs at least 10 per cent. This, he said, was impossible, but being convinced of the necessity, he conferred with the company's engineers and others and as a result, through the installation of some new equipment, actually finished the year with about 8 per cent reduction which showed a slight profit instead of a material loss as had been first thought likely. There is inevitably a certain amount of mental inertia in all of us which impels us to follow the line to which we are accustomed and it sometimes takes drastic action to break us out of the rut and adopt new and more profitable methods. There is hardly a mill in the country which is so efficient but what further advances can be made if the need be great enough.

Final Tentative Budget

When the final, revised estimates are received they too are submitted to the accounting department and the statements made up. It may be that all the suggestions of the committee cannot be adopted by the various departments, their representative on the committee having perhaps been too optimistic, but all this will have been thrashed out between the departments and the budgetary officer during the process of revision so that the final estimates may be considered to go so far as possible under the circumstances.

This budget so adopted will be the final tentative budget covering a period of from six months to a year. It is subject to revision if warranted by conditions and should be considered frequently as it bears on periods in the near future. It may be well to have this budget somewhat general in nature and a final budget for the succeeding month in full detail (agreeing in general with the long term budget) sometime during the current month. Thus a company would adopt a final tentative budget for a six-month period in December and at the same time each department would work out a detailed budget for their January operations. In January they would do the same for February and so on, but so far as possible, the final monthly budgets would key in with the six-month budget.

Use of the Budget

Now that we have our budget ready let us see how it operates and how it is used. Let us assume we have our final tentative budget and the detailed budget for the current month.

Those items which are controllable from day to day, such as labor, certain supplies, etc., are set up in daily and cumulative form, giving columns for the budget and the accumulated figure for the month to date. The actual expenses are collected as rapidly as possible and entered in the adjoining column so that a ready comparison may be had. These are submitted to all concerned as soon as possible, for daily control is of value only when served hot.

Care should be taken that only such items as are subject to daily control are so handled, and, on analyses, these will prove to be surprisingly few. To a great extent the important savings are discovered and effected only after a considerable period of study and research, but some items, such as labor, men, supplies and the like, certain items of raw materials, especially where substitutions of cheaper materials may readily be made for dearer ones can be watched daily to advantage. A little thought in analysing the controllable items for those that are really subject to daily control and those that are not is of great advantage, first because it greatly simplifies the reports and work incident to preparing them, and secondly because it allows the men to concentrate on items about which they can do something rather than scatter their efforts over a lot of matters.

The next step is to consider the longer periods. Would weekly resumés be of advantage? If so should items not appearing on the daily reports be considered? The same method of analysis and study should be taken here.

Monthly Reports

When, however, we consider the monthly reports, there is no question. Books are closed and a complete set of reports made with complete comparisons against the budget. Columns are made showing the budget, the actual and the differences. Sometimes an additional column showing the percentage the actual bears to the budgeted items is shown, the idea being that the expenses in a certain department may only be $100 in excess and still be 100 per cent high. How valuable this is depends upon circumstances. Certainly it is infrequent that $100 excess can be as important as an excess of $1,000, even though the former be 100 per cent and the latter only 10 per cent. However, it may give a valuable clue and should be considered.

Forms

Very few forms are shown in this series of articles for the reason that in any event the form should fit the case and a form that is of value in one mill may be useless in another. Hence no form for budgetary control will be shown here but, the general principles having been discussed, the preparation of a suitable form should present no especial difficulties. Should suggestions as to forms be desired the writer would be glad to aid through the medium of the Queries and Answers Department or by personal correspondence in the columns of THE PAPER INDUSTRY.

Consideration should be given in showing the results as well as in setting the budget as to what items are variable directly with the productions; what ones vary by steps and what ones are fixed. Thus, in the case of raw materials and certain items of expense a better comparison can be had on a per ton basis, whereas in other items, such as labor and expenses on the paper machines, a per diem or other time basis is best.

No fixed rule can be laid down. Study your own problem and see which method will show up the results most accurately and aid most in securing a control, but study each item in turn and classify it as—Variable with production; Semi-variable with production—varies in steps; Variable by time; Fixed; and set your standards and comparisons accordingly.

Fix responsibilities. If possible show the name of each man on the reports. This tends toward better morale and increases interest. And be sure that every one who is in an executive position from the straw-boss up, both aid in preparing the estimates and in getting the comparative result of the actual operations.

After each period passes—the day, week, or month, covered by the report—have all concerned go over the results and discuss the variances to see what can be done to eliminate excesses. It is chiefly as a basis of this that the next month's final budget is prepared. An excess in one period may be corrected in the next or it may be beyond repair. The quick knowledge that conditions are worse than expected may help a lot in making them better next month; or may disclose a situation in time to avoid costly and unexpected surprises. Of course, unexpected savings need not be corrected.

Much Information Needed

The operation of each budget will disclose a mine of ignorance and misinformation about the operations and set up machinery to get better statistics and costs. Until a budget has been in operation for sometime, it is astonishing how little may be known about many of the details of the company, the trends of its affairs and costs, as well as the economics of the industry and general business conditions. It will not take long to develop a set of statistics which will give valuable information which is actually needed to prepare and operate a budget, the lack of which was never appreciated until the problems were studied in advance and with considerable care.

This ends our consideration of the budget, though discussion might be carried on endlessly. Many excellent books are available and may be consulted for further suggestions, but a budget is, after all, such a common-sense development that once the idea is appreciated it tends to work itself out.

Future articles will discuss the matter of cost accounting itself and how the costs may be interpreted to increase the profits of the business. The budget confines itself to the controllable expenses, while the cost accounting takes everything into consideration. It is broader in its scope and the one supplements and aids the other.

By-Product Power in Paper Industry

Obtaining Higher Efficiencies in Generation

By JOHN FERGUSON
Ferguson Engineers, Chicago

THIS article is intended to outline some of the possibilities and efficiencies obtainable by the higher class of development of the steam power resources within the pulp and paper mill.

In the manufacture of pulp and paper where steam is used in process, drying and heating, the power obtainable from such steam in expanding from the initial boiler pressure through a prime mover to the pressure or pressures required in manufacturing, may be termed a by-product of the manufacturing system.

Field and Extent of Development

In a paper mill or chemical wood pulp plant, a certain amount of power, if not all, can be manufactured much cheaper than a like amount can be purchased from any public utility producing power from fuel.

The amount of such power obtainable would in general (in most cases) be sufficient to operate the entire works. The only class of mills that may not supply their entire demands by this by-product power (and these perhaps during the summer season only) are the news mills with groundwood sections and the small mills making bond papers of high rag content on account of the exceedingly large power requirements in proportion to the steam demands for process in such mills. Even in these mills, from 65 per cent to 100 per cent of the total power requirements can be supplied by this means, while the balance may be produced by water power or manufactured by condensing or part-condensing steam prime movers, or purchased.

The conditions governing the output or generation of by-product power vary with the different classes of paper and finished products and generally (not always) inversely in line with the quality and market price of the paper product, but more directly in the ratio of power to steam required in the manufacturing. As the power demand is increased and the steam demand is reduced, higher steam pressures and greater efficiency in the generation of power is demanded.

In board mills, where the steam demand is high and the power demand is low per unit of product, very high steam pressures or prime movers of extreme efficiencies are not very essential, so that there is no excuse for any plant of this class purchasing power, exhausting steam to the atmosphere, or passing steam through condensing units to be lost to the river.

In paper mills manufacturing the better class of paper, such as bonds and writing papers of all sulphite or rag content, where the steam demand is comparatively low and the power demand is high, higher steam pressures and more efficient system of power generation is required to produce power for the entire mill from the limited amount of steam required for process, drying and heating.

The amount of this by-product power that can be obtained in any paper mill, depends upon the range of steam expansion (determined by the initial steam pressure and back pressure to process, drying and heating), the type, class, efficiency and arrangement of prime movers and other equipment. Some idea of the importance of the class of equipment upon the by-product power available in paper mills will be referred to in a later section.

Balanced Conditions

In the question of a balanced steam and power system, there can scarcely be such a condition in a paper mill. Every effort should be made to over develop, that is, to attain an efficiency in power generation so that there will generally be a shortage of exhaust steam to the manufacturing system. This shortage can be supplied through a reducing valve from a higher pressure section of the steam system. No plant wasting steam to the atmosphere or generating power with steam going to a condenser, where the heat is lost to the circulating water not required in manufacturing, can have a balanced system.

The particular reason for overdeveloping is to have some leeway over a balanced condition, to meet the varying conditions of reduced steam demand or increased power demand or both, or to meet future conditions of increased power loads with perhaps less favorable steam demands.

Comparative Cost of Power

This low-cost power represents the cheapest class of power available from fuel and will compete with water power almost any place in this country. The actual cost of this by-product power will range in the more favorable cases of fuel and load conditions, from $.004 down to $.00275 per kw. hr., comparing with purchased electric power ranging from $20.00 to $14.00 per horsepower year as generally measured.

The heat consumption in fuel, due to the generation of this by-product steam power, including all boiler plant, prime mover and electric generator losses of a high class development, will be less than 5,000 B.t.u. per kw. hr. This corresponds to an overall thermal efficiency of over 68 per cent, equivalent to about 0.35 pounds of coal per kw. hr., or $.0007

per kw. hr. when based on a coal quality of 14,000 B.t.u. per pound, at $4.00 per ton of coal delivered.

Let us compare some of these by-product efficiencies with efficiencies of some of our largest and best steam-electric stations of super-power systems. In these stations the heat in fuel equivalent per kilowatt hour delivered to the consumer, is around 20,000 B. t. u. corresponding to about 17 per cent over-all thermal efficiency. We have heard and read a vast amount about the high efficiency of these super-power systems, but the fact exists that these stations are most ridiculously extravagant in the generation of power from fuel.

Recent Developments

In many power plants of paper mills recently installed, it would appear that very little study has been given to real over-all plant efficiency. In some of these installations, condensing and part-condensing prime movers have been installed, when all the power could have been obtained as by-product power. The coal consumption of the power produced by the condensing section of these units or plants, is about four times that required to produce the same power load by the higher class of development.

In some new installations, attempts to obtain more by-product power from the steam used, have been undertaken by the use of higher steam pressures but many of these have been developed with such low operating efficiency and high initial investment, that their gain in power output and lower operating cost, has been very much below what could have otherwise been obtained.

Power Available

In the accompanying chart is indicated the amount of power obtainable as by-product power from the steam required in the manufacturing system (process, drying and heating of buildings) for any range in expansion between the maximum or critical steam pressure of 3,200 pound per sq. in. and 17.7 pounds pressure absolute (3 pound gauge pressure), a common back pressure in paper mill operation. These curves represent performances of steam engine-generator units of the very highest class or special design for sizes of 1000 to 2000 kw. capacity or over.

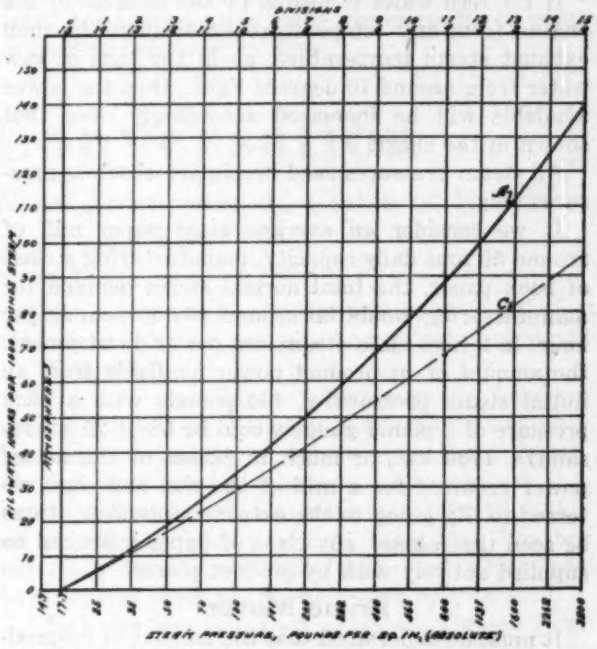
The initial steam pressures are based on saturated temperatures, up to the point of maximum heat content, and from this point up to 3,200 pound pressure we have figured for a total heat content of 1203 B.t.u. per pound.

In as much as it is intended here to consider only back pressure conditions generally required for paper mill operation, no attempt has been made to show results below atmosphere pressures.

Curve (A) indicates the amount of power in kw. hrs. available per 1,000 pounds of dry exhaust steam at terminal pressure expanded from any given initial steam pressure down to 17.7 pounds absolute (3 pound gauge) final exhaust pressure. In the preparation of this curve, we have taken into account stage heating of feed water, with steam bled from the different stages of expansion.

Example—For by-product power available in expansion from initial pressure of 800 pounds to final exhaust pressure of 17.7 pounds, read off from Curve (A). This equals 88 kw. per 1,000 pounds of exhaust steam per hour, or 88 kilowatt hours per 1,000 pounds of exhaust steam delivered to the system.

For intermediate initial and exhaust pressures when the range of expansion does not exceed 4 to 1,



By-product power available from steam required in the manufacturing system

the power output without feed water heating considered will be represented by the difference in the readings on Curve (C) corresponding to the initial and exhaust pressures.

Example—For power available in expansion from 400 pounds to 100 pound pressure, read off on Curve (C) corresponding to these pressures: 54.5—28.5= 26 kw. per 1,000 pounds of exhaust steam per hour.

For intermediate initial and exhaust pressures with expansion range in excess of 4 to 1, or sufficient to permit stage heating of feed water and with initial feed water temperature equal to the final exhaust temperature, read off the difference on Curve (C) corresponding to the initial and final exhaust pressures and add to this the difference in power, between curves (A) and (C) measured in a vertical line, at a distance measured in a horizontal line from the 17.7 line, equal to the actual spacing on the chart between the initial and exhaust pressures (see divisions at top of chart).

Example—To find the power available in expansion from 800 to 100 pound pressure: Reading off from curve (C) corresponding to 800 and 100 pound pressures, we have 67.5—28.5. A distance measured horizon-

tally to the right from zero terminal line (17.7 pounds pressure) equal to the distance between the 800 and 100 pound lines (see divisions at top) would coincide at 141 pounds. The difference in reading on curves (A) and (C) on this vertical line would be 42—35. Power available equals (67.5—28.5) + (42—35)=46 kw. per 1,000 pounds of exhaust steam per hour at process pressure of 100 pound absolute, delivered to the system.

With higher steam temperatures than considered in the above chart, the power output per unit of steam will be slightly increased.

If the feed water is heated by the exhaust of the engine from any temperature lower than the final exhaust steam temperature, as in the case of raw water from around 70 degrees Fahr., then the power available will be increased accordingly over that shown in the chart.

All steam pressures used herein are absolute pressures only.

If we consider an average sized paper mill of around 50 tons daily capacity, manufacturing a class of book paper, the total normal steam demand for manufacturing would be around 25,000 pounds per hour. In a high class steam and power development, the amount of by-product power available from an initial steam pressure of 400 pounds with a back pressure of 3 pound gauge would be 68 × 25 (thousand)= 1700 kw., or much in excess of the actual power required for a mill of the size and class referred to. By going to the extreme pressures, it can be seen that almost any class of paper mills can be supplied entirely with by-product power.

Prime Movers

It must be understood that the amount of by-product power available from the steam required for the manufacturing system, heating, etc., as indicated in the above chart, represents what can be accomplished with the highest class of development (meaning high efficiency, four-valve engine units of multiple expansion type) which can be obtained.

The advantage or gain with high and extreme steam pressures, is much greater in paper and pulp mills or other industrial plants, than with public service plants where condensing units are operated. The higher the working back pressure, the greater the gain in per cent in power by going to high and extreme pressures. It is evident that we will eventually see industrial plants, in many cases, using higher steam pressures than would be profitable for central stations of the condensing class.

In some paper mills steam may be required at different pressures in the manufacturing process. Such pressures are generally pretty well fixed and may be bled from different stages of expansion or exhaust pressures. Steam turbines or steam engines can generally be arranged to meet these different pressures, although it may call for a more or less special design in some cases. Steam engine units as a rule can be arranged more simply and efficiently for multiple and complicated bleeding and exhaust pressures, than the turbine units.

In the past, higher efficiencies in the generation of power were sought for in the low pressure stages or vacuum, but today higher efficiencies are sought at the other end of the cycle in high and extreme pressures and getting away from the lower stages of expansion, to avoid the condenser losses.

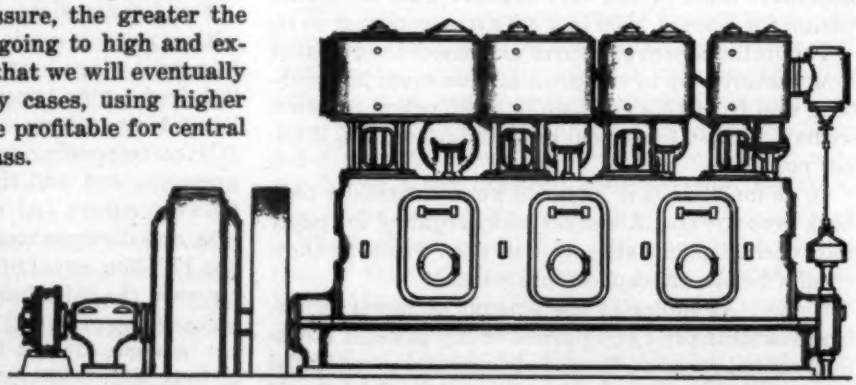
With the introduction of high and extreme steam pressures, a new line of prime movers of the reciprocating type will be used, particularly in the paper mill and other industrial fields. In these fields, back pressure operation will prevail and very little so-called condensing operation will be required.

Steam engines of the higher class are much more efficient in generation of power than steam turbines of equal capacity, when working within a steam pressure range above atmosphere, and in some cases considerably below atmosphere. The higher the initial pressure, or the higher the working back pressure, the greater advantage the engine will have over the steam turbine.

In the steam engine principle, there are characteristics and construction features that make it most ideal for high and extreme working pressures and less favorable for low pressure service. In the turbine principle, characteristics and construction features exist that make it most ideal for low working pressures and less favorable for high and extreme pressures.

The steam engine can be built for satisfactory operation under any initial pressure up to the critical steam pressure of 3,200 pounds per sq. in. and for any temperature up to 400 degrees C. or 752 degrees Fahr., and in any capacity suitable for paper mills.

The former disadvantages of the reciprocating unit, such as large floor space and expensive foundations, have been reduced to compete with other types of prime movers. As to the reliability of service, long



A design of 1600 kilowatt quadruple expansion engine and generator unit at 400 r.p.m., for high and extreme initial steam pressures and moderate exhaust pressures

continuous operation without stop or adjustment and long useful life of unit, the steam engine seems to hold the record by a considerable margin.

It will be noted that a higher initial steam pressure to gain a greater range of expansion of the steam, is no more essential than the proper selection of prime mover and equipment and arrangement of same, in obtaining more by-product power.

The more efficient prime mover and equipment may produce several times as much by-product power as the less efficient prime mover and equipment, with equal initial and exhaust pressures; or the former may produce as much by-product power with an initial pressure of say 200 pounds as the latter plant will with many times this pressure, when operating under equal exhaust or back pressure. The difference in efficiency of the prime mover alone, may make considerable difference in initial pressure required and particularly in the higher pressure ranges.

Why go up to high and extreme initial steam pressures in boiler plant installation and then go down to the lower efficiencies in prime movers and equipment in utilizing this pressure, yet this is exactly what has been done in many power plants of paper mills now built and building.

A Noon Hour Conversation

Argument of Converted Employee Wins Antagonist to Cause of Safety

By MARIN PHILLIPS

Electrical Superintendent, International Paper and Power Co., Niagara Falls, N. Y.

THE noon whistle has blown, and as usual we find Bill and George in their regular place behind the boiler house having their noonday lunch and the customary smokes. Each day Bill and George discuss some phase of life. To-day, we find them discussing the safety first work.

"George, what do you think about this safety first talk that we hear so much about these days?"

"Well, I—I, what do you think of it, Bill?"

"Well, I'll tell you what I think of it. I think it is a lot of bunk, just an excuse to keep a white collared guy in a job. We are grown up. I have even voted for two presidents already and don't need to have any one trying to force something down my neck when I don't need it and don't believe in it. You know, George, when that white collared guy they call 'safety inspector' comes around my machine, I swell up, get hot under the collar and feel just like throwing him out of the window or something worse. Furthermore, you know I have been running my machine for ten years and have not had any of those accidents yet. The very idea of some bird who never worked on a machine like mine coming around to see if it is possible for me to crawl into a pulley or belt. It is time for us red blooded men to start asserting our rights and let them know that we stopped playing with toys several years back. We are able to take care of ourselves, aren't we, George? But I am ahead of the story, I asked you what you thought about this safety stuff and you enjoy a good smoke while I tell you what I think about it. It's my turn to fill up and listen to your story."

George knocks the ashes out of his pipe, assumes a serious expression and hesitates in getting started. Bill gets a hunch that George's story is not going to line up with his.

"What's the matter, George, you are not getting cold feet are you? I have always taken you as being a hard guy. You're not getting soft now, are you?"

"Well, yes."

"Yes, you are going to admit now that you are getting old and it is time to start taking anything that any one wants to put on you. Don't forget, George, that you have been as much against this safety stuff as I have. You seem to be forgetting this all of a sudden. Come on now, brace up. You are not ready for the old ladies' home yet. Why, you have several years yet to show your he-man stuff."

"Well you see, Bill, I am changed. I guess I am converted all right."

"George, I can't understand you. That safety first bird must be a wow and know his onions pretty good to convert a hard guy like you have been to his cause.

"Yes, I am converted all right. I can see it now. You can call me old and soft, and getting ready for the old ladies' home or whatever you may, I am thinking and seeing things from a different angle now. Yes, I have been a tough guy, been against every safety movement in my department. I have hated the looks of our safety inspector. I have boasted that this safety first talk was all right for women, children and old men, that I could take care of myself."

"Well, George, we have one-half hour left. You may as well tell me how this safety first bird cast his spell over you. It may help me to keep him from doing the same thing to me."

"He is not altogether responsible for my changing, Bill, although I have to admit that he has been a good fellow with a lot of patience. If he had shown the same disposition toward me that I have toward him, there would have been a free scrap every time he came into my department. Perhaps his good nature and being able to outguess me have

been the chief factors in my change of attitude. I have had a couple of narrow escapes from being injured myself. Then, too, you know there is more than that bothering me."

"There is no better time than now, George, to tell me about it."

"Bill, do you remember Steve Littleton, the young fellow that used to work on my machine? You remember we called him 'the kid'."

"Yes, I believe I do remember him. You mean the kid that lost three fingers on the revolving knife?"

"You're right, that is just who I mean. You know that kid's injury kinda haunts me yet."

"Why, George, that happened a couple of years ago. Why worry about it now? If I remember correctly, you didn't think much about it at the time it happened."

"No, I didn't. I was in the hard-boiled class then. Just figured he should have kept out of the way. You know, Bill, every time I think of the kid having to go through life with that handicap, I realize how badly we need all of the faculties provided by nature. You know, at times I really feel responsible for the kid's injury."

"I don't see why you should have cause to feel that way."

"Well, they tell me that I was in charge of the machine and it was my duty to put the new man wise to any danger or hazards connected with my machine. This I did not do. I merely told him what his duties were and let it go at that."

"Do you really believe, George, that if you had preached this safety first talk to the kid it would have prevented the accident?"

"That, of course, I can't be sure of, but my conscience would have been clear and would not be bothering me now."

"But, George, there must be something more than you have told that keeps that old accident fresh in your mind."

"Yes, there must be. You know, Bill, I have a youngster, a boy that will soon be going into the plant to work. Perhaps it is this that keeps it so fresh in my mind. I often wonder if he will be as unlucky as the poor kid that started to work under me, or will he be lucky enough to get started right under some one that will take the time to teach him the right and the wrong regarding safe working habits, the thing which I always left for the other fellow to do. My motto was 'they will learn'."

"Gosh, George, I hadn't thought of that side of the question. Golly, if that whistle don't blow pretty soon you will have me thinking about this safety first stuff, too."

"You know, Bill, I am going to start working with our safety inspector instead of against him. In the past, when he came around my machine I have sat back and growled until he left the department, but the next time he comes around, I am going around my machine with him. I have a few suggestions to make myself about safety guards."

"You don't mean to sit there and tell me that that kid's accident two years ago is going to make a safety inspector out of you now?"

"Yes, Bill, that has helped, but what I see every day has been sufficient to finish the job."

"Now what else can you possibly dig up in an hour?"

"Bill, you know Henry Stevens, everybody called him Hank for short? He lives down on my street, in fact, just across the road."

"Yes, I think I know who you mean."

"You know, Bill, he was a millwright down at the barrel factory. I used to watch him a few years back. He had a nice car, a home, a wife and kiddies."

"What has this got to do with our story?"

"Well, you know, one day they say he had to rip a timber on the saw and it was too thick to go under the saw guard, so he took it off. His hand slipped and he received an injury that resulted in the loss of the hand. I used to watch Hank on a Sunday afternoon. He would put the wife and kiddies in the car, put the dog on the running board and take the picnic lunch and beat it for the lake."

"That's the life, eh, George?"

"Yes, but he can't do that now."

"Why not?"

"Because, you see, Bill, accidents cost money. Hank had to sell his car right after the accident and a man with only one hand doesn't have a chance to earn much money."

"Gee, George, that is something I hadn't thought about. It sure is a tough break for Hank all right."

"Yes, but that isn't all. Think of the good things of life the family will have to go without. Think of the kiddies and their education, something they are entitled to."

"Yes, that's something else we overlook."

"One such accident may shape the destiny of several generations."

"You know, George, I have a family and boys that will some day be working in these plants. Do you think the same thing might happen to me that happened to Hank?"

"Yes, Bill, such an accident is more apt to happen to men like you and I have been than it is to those who believe in safety work. You know there is an old saying that 'the Lord takes care of those who are unable to take care of themselves.' The more I look back and think of the reckless chances I have taken and the disregard I've had for safety work, the more I think of this old saying being true. Do you remember my passing by your machine this morning?"

"Yes, George, why?"

"Do you remember then that you had the guard off of a set of gears near where you were working?"

"Yes, but I knew it was off, and—and I was careful not to get near it."

"But, Bill, don't you realize there were other workmen around the machine who did not know it? Then, too, you could have forgotten it or slipped and put your hand in the gears."

"Yes, I guess you are right, there is no need of my trying to win in an argument with you. Say, George, you planned this talk ahead for me to-day, didn't you?"

"No, not exactly."

"Then why were you able to cut me off without an answer on all points?"

"I don't know, Bill, unless—unless I have been stating facts. You know this has been troubling me for a long time. Yes, I may be getting old, I may be getting soft, and I may be headed for the old ladies' home, but I am going to try from now on to steer clear of the rehabilitation hospital."

"Gee, George, you should have been a preacher."

"Why so?"

"Why? Because you have just about converted me to the safety first cause."

"Come on, Bill. It's time for the whistle to blow."

"Uh, George?"

"Yes, Bill, what is it?"

"You know, George, I have been a knocker against safety work."

"Yes, Bill, and you know that everybody in the plant knows it?"

"Yes. Do you think they would laugh at me if I get into this safety first work?"

"No, Bill, they will think all the more of you for it. You know the old saying 'that a wise man changes his mind, but a fool never does'."

"All right, George, I am with you from now on. We'll have a big surprise for the safety inspector the next time he comes into our department. We will co-operate with him in the reduction of accident hazards. We will call his attention to unsafe conditions in our department."

"Yes, we will go farther than that, we will assist and help carry on any plant safety program that is destined to lessen accidents."

Just then the one o'clock whistle blew. We see Bill and George shaking hands over this noon hour discussion. They both feel they have gotten a great deal out of it. They return to work completely converted to the safety first cause and with a solemn vow that from this day on they will aid and support their safety inspector. This they have resolved to do for their own safety and with a nobler point in view—the safety and welfare of their fellow workmen and those young men that are to follow in their footsteps. Yes, their boys will be in this army of young workers.

High-Pressure Steam Economies

Actual Cost Figures Show High-Pressure Power Plant Saves Rhinelander Paper Company $200,000 Per Year

By G. H. SUHS

Chief Engineer, Rhinelander Paper Co., Rhinelander, Wis.

THE technical press regularly publishes articles covering possible gains to be made by revising power plants which have been in service for a generation. Some of these gains are such that the normal manager has questioned the accuracy of the basic figures.

In the paper mill industry in particular the manager is far from being an engineer. If he is a man of mill experience the chances are that he has come from the paper mill end—and the boiler room has been considered a necessary evil. To him the paper mill is the end upon which money should be spent.

As modern cost accounting has established itself in the paper industry, that industry has awakened to the fact that the costs of power, electricity and steam, are a major conversion cost. The executive has been forced to give this end attention.

Concrete examples covering details of both old and new installations and giving actual savings should be of definite advantage to the industry as a whole and give the executive and engineer tangible data upon which to work.

The Problem and How Studied

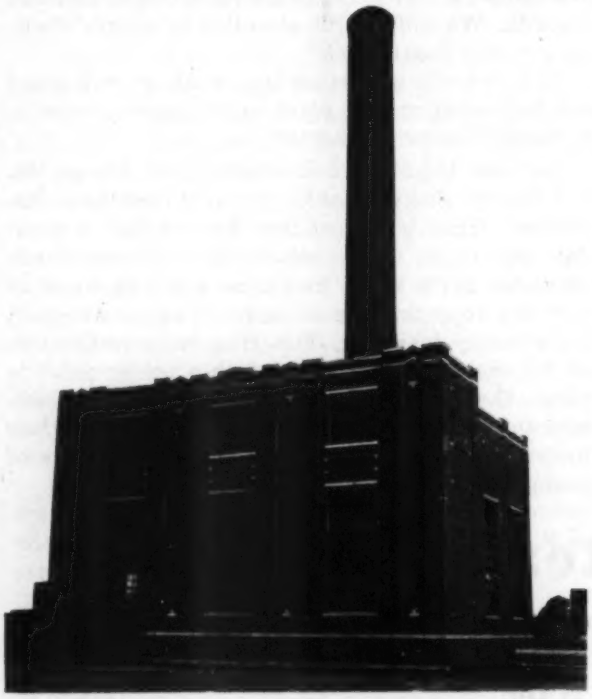
The Rhinelander Paper Company conducted a very extensive expansion program during 1927 and 1928. Along with other changes the power end was completely replaced by a modern high-pressure plant.

The old boiler room was originally built in 1903 and contained five Sterling boilers of 2,800 sq. ft. heating surface and designed for 150 lbs. per sq. in. operating pressure. Further expansion in the paper mill end necessitated adding more boilers, so two boilers of 3,200 sq. ft. heating surface were installed in 1914. These were built for 200 lbs. per sq. in. operating pressure. Later another 200-lb. boiler of 4,800 sq. ft. heating surface was installed in connection with the installation of a 2,000 kv. a. extraction turbine. The 200-lb. boilers were all equipped with superheaters giving a total temperature of 500 deg. Fahr. The two steam conditions were so different that the operating department was in continual trouble. The high-pressure boilers could not assist the low-pressure boilers in case of demand for more capacity and vice versa. As the mill operated four sulphite digesters as well

as four paper machines, operating men can well understand the layout to be most unsatisfactory.

About 2,400 kv. a. of hydro capacity was also installed but this was subject to the normal fluctuations found in any river flow. This variation was from 2,400 kw. to 700 kw., with make up, of course, from steam. This again added to the variable load on the steam plant.

The mill expansion program, started in 1927, made additional power, both steam and electric, absolutely necessary. The condition of the old plant was fully realized by the management and the decision was made to proceed with new equipment.



Modern high-pressure power plant of Rhinelander Paper Co., Rhinelander, Wisconsin

The capacity of the old plant was such that no reserve steaming or power generating capacity existed. As a matter of fact, a shut down of a boiler meant a partial mill shut down. No space could be spared for new units in the old structure, so an entirely new plant was designed.

An initial study of mill load conditions existing in 1927 showed an average total demand per hour:

Steam ..... 81,000 lbs.
Electrical energy .....3,000 kw.

A new paper machine would add to this per hour for peak:

Steam ..... 12,500 lbs.
Electrical energy .....1,200 kw.

This would make a total mill load per hour:

Steam ..... 93,500 lbs.
Electrical energy .....4,200 kw.

These figures represented total mill load and were subject to subdivisions for power, process and heating, on the steam end, and to a subdivision for steam and hydro power on the electrical end.

Mill process required about 1,000,000 lbs. per day at 150 lbs. gauge. A heating load plus some process required about 240,000 lbs. per day at 20 lbs. gauge. The remaining steam would go to the turbine. Turbine load was of course dependent on river flow conditions.

The fluctuations to be met for the above average loading were estimated as shown in Table I.

TABLE I

	Turbine Electrical Energy Kw.	125-lb. Steam, Lbs. per Hr.	20-lb. Steam, Lbs. per Hr.
Minimum	1,800	23,000	0
Maximum	3,400	57,000	16,000
Average	2,800	38,000	12,000

Three main plans were studied as a possible solution, as follows:

(1) Purchase power from a utility and use the present plant to capacity for process steam and some power.

(2) Install additional 200-lb. boilers to operate with existing 200-lb. boilers and install additional 200-lb. condensing turbine.

(3A) Install high-pressure boilers with a back-pressure turbine to exhaust at 150 lbs. and operate in conjunction with the existing turbine.

(3B) Install high-pressure boilers and use a double-extraction turbine exhausting to a condenser. Supply 150-lb. and 20-lb. steam by extraction and balance power by condensing operation.

Yearly operating costs for the different plans were estimated as follows:

Plan 1.....$453,000.00
Plan 2..... 334,000.00
Plan 3A 267,000.00
3B 255,000.00

Type of Turbine Selected

These costs indicated the double-extraction operation to be most economical. Some engineers may raise a question here, stating that a back-pressure turbine is more efficient. This is true for the back-pressure machine alone, but where it must be used in conjunction with another unit, the combination may not be particularly efficient. In this particular case, the double-extraction machine showed a saving of 3,000 lbs. of steam per hour over the combination of back-pressure and existing turbine.

Other features also must be studied when considering a back-pressure turbine. Such a unit is always limited in its performance by the steam demand at the exhaust end and many conditions may arise when the mill steam demand may drop to a very low point, yet the power demand hold up to normal. Such conditions have occurred in several installations and the turbine has been condemned—where the real fault has been misapplication.

The back-pressure turbine is an ideal machine to float on the line of a large power system and generate all possible power while acting as a reducing valve with the system frequency maintained by other units.

The extraction turbine seems the type necessary to meet fluctuating process steam demand and also act as the stabilizing unit on the mill power system.

Another feature for consideration is that almost no industry can lay out a specific load condition and feel that it will hold. The extraction machine can meet a wide change in conditions, at some sacrifice in economy, where the back-pressure unit would be completely "out" under a similar change.

Class of High-Pressure Adopted

In determining the pressure to use in the high-pressure system, consideration was given to the various commercial pressures in use. However, it was felt that 400 lbs. was so standardized as to be best adapted to industrial service. Higher pressures called for more specialized equipment, and, in the case of boilers, for extremely expensive construction.

It is interesting to note here that of some 150 industrial high-pressure plants in this country, about 90 per cent are in the 400-lb. class.

High superheat is usually another factor traveling hand in hand with economical high-pressure operation. But here industrial practice must deviate from central station standards, as the governing feature is the character of the extracted steam, which must be controlled to meet process conditions. In this case 400 deg. Fahr. was placed as the limiting temperature of the intermediate extracted steam. This held the initial superheat to 550 deg. Fahr. total temperature.

Boiler Equipment

The paper so far has covered the consideration of the various factors necessary to determine turbine and steam characteristics. These must naturally be first determined b e f o r e steam generating equipment could be purchased.

As was indicated earlier in the article, the steam demand with the new machine was estimated at 93,500 lbs. per hr. This would call for about 200 per cent rating on two 834 hp. boilers or 175 per cent rating on three 600 hp. boilers.

The final decision was to install two 834 hp. boilers but construct the building for three. Fuel burning equipment to give 400 per cent rating was installed under each boiler, which would permit of operation of the entire mill with but one unit on the line—for emergency conditions or repairs. With good river flow conditions to relieve the steam power demand, one boiler could carry the load nicely and permit of a thorough overhauling of the other.

In considering fuel burning equipment, the question of stokers vs. powdered coal naturally came up. Guaranteed operating efficiencies of the two systems were within one per cent. Operating characteristics were therefore the deciding elements, and the decision was stokers with clinker grinders.

The reason for this was that at the time initial design of this plant was started—1927—a great deal of trouble was still being encountered with wet coal in pulverizers. The geographical location of this plant is in the "snow belt" and winter snows are severe and lasting. It was felt stokers would carry through better, as coal with a large amount of snow would make for the worst possible moisture conditions in a pulverizer.

With rating as high as 400 per cent under consideration, water walls seemed a good insurance against outage from refractory and slagging troubles. Accordingly, 42-inch water walls were purchased for the furnace side walls and the rear of the clinker pit was water wall.

Coal cost $5.65 per ton. Economizers should therefore receive serious consideration, and units of 60 per cent of boiler area were installed. These were designed to reduce final exit gases to 365 deg. F. at 200 per cent of rating with 240 deg. F. feed water.

4,000 kilowatt double extraction condensing Westinghouse generator unit, installed at Rhinelander Paper Company

The load conditions as already given indicated a power peak of 4,200 kw. with a minimum hydro capacity of 700 kw. This would leave 3,500 kw. for turbine peak. The final purchase was a 5,000 kv. a.-80 per cent p.f. unit built for 385 lb.-550 deg. Fahr. steam and extraction at 125 lbs. and 20 lbs. to operate under load conditions as indicated in Table I. 125 lbs. was decided as being entirely satisfactory for the intermediate pressure rather than 150 lbs. as it permitted a better power recovery from turbine and the mill process could operate equally well.

The turbine as purchased was of unusual design in many respects. The main governor was of a super sensitive type and functioned solely as a speed governor. Each extraction operated solely as a pressure regulator. No connection whatever existed between the extraction controls and the governor.

A reducing and desuperheating station was installed to permit mill operation with the turbine down or under any unusual demand condition.

Actual Operation and Costs

Boiler Room—The turbine was not financed as a part of the original program, so the boiler room was operated for five months at 200 lbs. pressure. The 200-lb. steam was delivered to the existing turbine and the 125-lb. mill supply was passed through the reducing and desuperheating station.

For the five months in question, steam costs were reduced 20¢ per 1,000 lbs. below previous records. The yearly load based on the data from those five months will be 850,000,000 lbs. of steam. A saving of 20¢ per 1,000 lbs. means a yearly saving of $170,000.

Turbine and Boilers at High-Pressure—The high-pressure turbine was placed in operation in June and operating pressure was immediately raised to 400 lbs. Notwithstanding the usual outages and delays incident to placing such a unit in commission, the total coal burned dropped 700 tons for the month of June over the previous month's figure of 3,300 tons. In July an additional reduction of 200 tons was made.

The difference in the cost per kw., when operating at 200 lbs. and when operating at 400 lbs. was 0.28¢ per kw. The yearly power demand has climbed to 26,000,000 kw. This indicates a yearly saving of $70,000 due to high-pressure operation alone.

This last saving should be of definite interest as it shows what has actually been accomplished by high-pressure operation alone.

The usual transition from an obsolete boiler room to a modern high-pressure plant is made in one "jump." In this case, however, the new boiler room was installed and operated for a time at 200 lbs. with a fairly modern condensing turbine. The same boiler room was then operated at 400 lbs. with an extraction unit. It is fair to assume in each case that the boiler room efficiencies were equal, so the saving of $70,000 can safely be credited to the high-pressure extraction operation.

While some details of cost figures may be at variance with practice in other mills, the comparative costs are on the same basis, so the differences or savings should be accurate.

Assuming the plant is entirely new and allowing $20,000 per year for maintenance, there still remains a total saving of $220,000 to be credited the new installation.

Actual coal figures have been quoted as an additional proof of savings.

The new boiler room has of course materially reduced personnel and repairs and is producing 25 per cent to 50 per cent more steam than the old equipment, all of which are indicated in the savings made.

The operating crew started 400-lb. operation with a most healthy respect for higher-pressure. No unusual conditions have occurred.

The turbine has performed very satisfactorily. The frequency has been maintained within 0.2 cycle and the extraction has been held within a few pounds when meeting such an erratic steam demand as occassioned by sulphite digester load.

Principal Equipment

Boilers, 2—834 hp., 415 lbs.....Babcock & Wilcox Co.
Superheaters .....Babcock & Wilcox Co.
Economizers, 5,284 sq. ft.....Foster-Wheeler Corp.
Pop Safety Valves.....Consolidated-Ashcroft-Hancock Co.
Soot Blowers.....Diamond Power Specialty Co.
Stokers, 8-retort, 29-tuyere, clinker grinder type .....American Engineering Co.
Water Walls, 250 sq. ft. per boiler..American Engineering Co.
Feed Water Regulators, S. C.....Swartout Mfg. Co.
Boiler Meters .....Bailey Meter Co.
Combustion Control.....Hagan Corporation
Forced Draft Fan, 41,600 c.f.m against 5.9 in. static pressure.....Buffalo Forge Co.
Induced Draft Fan, 59,600 c.f.m air against 7 in. static presure.....Buffalo Forge Co.
Breeching and Air Ducts.....Connery Co.
Stack, 11'-6" diameter by 200' high .....Alphons Custodis Chimney Construction Co.
Piping .....Pittsburg Piping & Equipment Co.
Desuperheater, 8" Elliott with S.C. temperature control .....Elliott Co.
Reducing Valve, 8".....Locke Mfg. Co.
Globe Valves and Stop Checks....Edwards Valve & Mfg. Co.
Gate Valves.....Chapman Valve Mfg. Co.
Boiler Feed Pumps, 400 g.p.m., 475 lb. pressure .....Worthington Pump & Machinery Corp.
Boiler Feed Pump Drive, 189 hp., 1950 r.p.m. .....General Electric Co.
Boiler Feed Pump Drive, 200 hp., 1800 r.p.m., 440 v., 3 phase, 60 cycles.....General Electric Co.
General Motors.....General Electric Co.
Turbine, 5,000 kv. a., 80 p.f., 440 v., 3 phase, 60 cycle, taking steam at 385 lb. gauge, 550 deg. f.t.t. .....Westinghouse Electric & Mfg. Co.
Condenser and Auxiliaries..Westinghouse Electric & Mfg. Co.
Generator Panel, Control and Main Breaker .....General Electric Co.
Ash Hoppers .....Atlas Conveyor Co.
Blow Off Valves.....Eckenroth Valve & Mfg. Co.
Coal Handling Machinery.....Link Belt Co.
Boiler Water Control.....Hall System
General Contractor..C. R. Meyers & Sons Co., Oshkosh, Wis.

Joy in one's work is the consummate tool without which the work may be done indeed, but without which the work will always be done slowly, clumsily and without its finest perfections.—Phillips Brookes.

Current Thought by William Sibley

This Matter of Efficiency

RECENTLY, Mrs. Sibley and I took a couple of weeks and devoted them to visits to a number of paper mills in New England. I believe the time thus spent was highly profitable because I found everywhere evidences of sincerity of purpose and a very marked desire on the part of many executives for knowledge of machinery and methods which would accomplish the same or added results for lower costs.

In addition to finding this mental trend I noticed, in every plant visited, a great many cases where general efficiency might be greatly heightened by the expenditure of a comparatively small amount of money for devices that have been available for the last ten, fifteen or twenty years.

Doubtless there are, in the paper industry, a number of prominent executives who feel rather keenly the memory of the money spent and lost on so-called "efficiency engineer." Certainly, it is not with any thought of setting myself up as an efficiency engineer that I dictate these few paragraphs. I will say, however, that one of the best ways to improve the industrial and economic situation in the paper industry is to more universally substitute mechanical means for human effort. Conditions generally are now favorable to the successful operation of every one of our paper mills because business today is more receptive than ever to increase paper consumption and the application of paper to a much wider variety of uses. This means that the present is the best time available to scrap obsolete machinery and methods and modernize all operations.

There are too many who believe that the manufacture of paper still involves "secret processes and cannot be done mechanically. I believe it is a fact that more than 90 per cent of our paper mills are continuing a great many of their methods as they were handled years ago—and in a manner that should have been abandoned before the war.

It must be acclimatic that the salvation of our future lies in the multiplication of man power by making it possible for the lowest type of workman to become a master of a machine. This fact was discovered through the perfection of an almost endless variety of inventions which vastly increase a man's capacity for work and greatly decrease his per unit production cost. But even a superficial inspection of a number of mills plainly discloses that there is a job ahead of us that is certainly far from finished.

In one mill, enjoying a nationwide deputation and doing a very creditable job in both production and sales, the visitor finds the back breaking labor of shoveling coal into the fire box and pulling clinkers out of the grate by hand. In another mill, one with an even greater reputation among paper producers because there's is a product which permits national advertising, one finds the heavy rolls of paper toted around on hand trucks and stacked by din of human muscles.

Why is it that the advantages of stokers, and coal and ash handling equipment together with electric hoists, conveying equipment and other material handling machinery are not sufficiently self-evident to be recognized? Why must we continue to ignore the saving of time, effort and material that comes through the adoption of labor aiding and labor saving machinery—if only because of the increased and the comparative freedom from radicalism those machines make possible.

The executives of those mills which to-day are doing an outstanding job—from the standpoint of dividends—will be found continually alert to the possibilities of cutting expenses and increasing output through the adoption of improved machinery or the abandonment of methods which have outlived their usefulness in comparison with those methods which can be obtained. Indeed, the outstanding successes in the executive end of American business as a whole are those who made frequent journeys into the outside world of ideas and machines and have brought home with them those thoughts and that apparatus which can be of practical value to their own companies.

The successful executive to-day knows that the most valuable ideas concerning his individual business comes from other individuals who have no connection with his particular business. It is the outsider's viewpoint that is universally the most valu-

able and the man who is to-day making a greater success than his neighbor is the one who recognizes the value of outsiders' ideas—and goes after them.

Wherever men are lifting loads, using picks and shovels, pushing wheelbarrows about, or doing some other kind of hand labor it is an almost five to one bet that somewhere there could be had a device which would not only eliminate this type of costly physical effort, but probably effect considerable economy in material plus an increase in quality.

Only in rare instances is it necessary to design new equipment to rid a particular job of the necessity for costly hand labor. The jobs being performed today by mechanical devices are almost unbelievable to many people who have not seen those operations with their own eyes. Not only do the machines of to-day perform such Herculean tasks as dropping a one hundred ton gondola car of coal in seventy-five seconds with thirty-five horsepower, or excavate at the rate of ninety tons to the dipper full —but they perform such delicate tasks as grading cigars by their color, testing eggs at the rate of five hundred a minute, and extract the gold dust from the air at the mint in Philadelphia.

Not long ago I visited a plant where one conveyor carried cans of oil and another conveyor brought along the boxes. When the box and the can arrived at a definite point a few feet from each other, an attendant pressed a foot lever which tilted the box to an angle that permitted the can to be easily put into it. The lever was held down until the box had been filled with cans, after which it was released and the box resumed its upright position on the conveyor —automatically to be carried farther down the line to the nailing machine where the cover was fastened on.

An Ohio malleable casting manufacturer succeeded in reducing his personnel by nearly one-half through the installation of equipment to keep castings on wheels for a time after they had been taken from the molds until they were ready to ship. The new scheme cut out five manual handlings and in one department reduced the force from twelve to three men. In another plant the superintendent had a small device—about the size of a dinner plate—which he had attached to one end of a large machine. This small device, virtually a microphone, would stop the machine instantly at the cry of "help." The installation of this machine does not as yet effect the insurance rates or the insurance compensation schedule, but certainly, the wide adoption of such instruments for the safeguard of workmen's lives and limbs will do far more in insurance and compensation alone to justify its experimentation and adoption.

By employing the principle of radio, one paper mill now finds itself capable of producing paper which is far more uniform in quality, thickness and texture than ever before. But it is not so much these special instruments, devices and methods that we refer to, as it is the simple operations which involve the uses of wheelbarrows, shovels and hoes.

No superintendent in any company has exhausted the opportunity to save time, effort and material. The most watchful manager who is constantly on the lookout for new things finds even himself almost unable to keep pace with the flood of new inventions. Too few superintendents, however, are in that position. It is the rare exception—and invariably that rare exception is a man who represents a mill that is at the top of the heap.

I believe it would be an expense eminently worth while to put a skilled production man at the job of visiting other production plants throughout the United States, but with the definite instructions to stay away from all paper mills. If your production man could visit automotive plants, textile mills, sugar refineries, woodworking plants, power plants, paint factories, and all manner of fabricating institutions he could here and there pick up ideas that would lift the efficiency of your plant to a point where it never before had been.

The economies that might be effected in the average paper mill, considering only those minor labor tasks, would be found to be stupendous if carefully calculated. Isn't there much in the suggestion that you go out into your own paper mill again—but this time with the eyes of an outsider. Look at your mill as if you had never before seen it. Talk to the men as if they were strangers to you. Get the outsider's viewpoint. If you do that carefully and sincerely you probably will be able to see ways and means whereby you lop off a great deal of waste in time, effort and material.

Have Faith in Yourself

MOST men go to pieces when they have had a few good beatings. They wilt. They fade away. They crawl in a safe little corner and hide while the great rough tide of glorious life rushes past them.

The fact is that defeat is the normal thing in this haphazard little world and victory comes but seldom. Every victory, usually, is the result of a long series of defeats. A man must have faith in himself, and in what he is trying to do.

He must say "I can." He must back himself to win. He must bet on himself. He must have faith in the people he works with. He must believe in his team.

He must see the better side of his co-workers and not think that his own point of view is the only right one. He must have faith in those great principles that make us superior to the animals of the forests —to truth, honesty, sympathy, justice, progress.

—Forbes Magazine.

You seldom find failure where there is orderliness. You frequently find it where there is confusion. Uncertainty in business is not only unnecessary, but expensive.—The Shears.

New Power Plant at Waldorf Paper Products Co.

Board Mill Installs New Boilers and Generating Equipment and Utilizes By-Product Power to Decrease Cost of Production

By HARRY E. WESTON
Staff Representative

PRODUCTION and engineering executives in any plant are constantly confronted with the problem of producing marketable products at the least cost per unit of time. Methods employed to obtain suitable production costs would naturally depend upon many factors and the point of view of the personnel responsible for such activities.

An analytical study of conditions at the plant of the Waldorf Paper Products Company, St. Paul, Minn., showed the advisability of increasing the total productive capacity of the plant, of eliminating a large purchased-power bill, and of reducing the cost of power made at the plant. To benefit from the findings in this study meant a complete rebuilding of the power plant, and some changes in process equipment as well as in process operation.

Old Power Plant Installation

The major power plant equipment of the old installation consisted of six Edge Moor straight tube two-drum longitudinal boilers; one 600 kw. 250 v. direct current generator, direct connected to a horizontal twin Buckeye engine; one 350 kw. 250 v. direct current generator, direct connected to a twin vertical Buckeye engine; one 350 kw. 250 v. direct current generator, connected to a compound vertical Buckeye engine, operating condensing; three motor generator sets, and two banks of transformers which run off of purchased power.

In the old boiler installation, two units were of 500 hp. capacity each, two were 469 hp., and two were 355 hp. Two of the six boilers were fired through Riley stokers, while the other four were equipped with Murphy stokers. Five of the six boilers were operated to carry the steam load at 175 pounds pressure, while the sixth boiler served as a stand-by.

The purchased power was delivered at the plant as 4,000 v. alternating current. A portion of this energy was transformed through the two banks of transformers to 440 v. A. C., while the remainder was converted to 220 v. direct current.

In the development of the new plant, it was necessary to utilize the buildings housing the old equipment and to make all changes without interfering with the production schedule. Naturally, in the design of the new power plant the old buildings offered limitations in the way of layout and size of equipment because of existing walls, basement and roofs. Likewise, the problem of removing old equipment and the installation of new equipment simultaneously offered real engineering complications that had to be overcome.

Provision was made in the new plant to use the coal bunker of the old installation. This bunker, with a capacity of 1,000 tons, is of U-shaped boiler plate steel construction. It is supported from the building framework. Both the track hopper and the Beaumont skip hoist of the old plant were also utilized in the new installation. Likewise, the weigh larry of the old installation was rebuilt to meet the needs of the new plant.

Major Equipment of New Plant

In place of the six old boilers with stoker method of firing were substituted two 1,346 hp. Edge Moor boilers of the revised single pass type fired with pulverized coal. These boilers were designed and specially built for the Waldorf job, as is the case with all Edge Moor boiler installations.

Each of the two Edge Moor boilers was built for a working pressure of 650 pounds and a total temperature of 750° Fahr. (including 250° of superheat). The respective heating section of each boiler was proportioned to bring up the temperature of the water gradually to the corresponding temperature of the boiler steam pressure with the flow of water directed counter to the flow of gases. In addition to the heating section, each boiler includes a closed circuit steaming section in which the water is vaporized independently of the heating, a Foster Wheeler superheater, soot blowing equipment, Foster Wheeler water walls, and an Edge Moor tubular air preheater. The Foster Wheeler superheater is installed directly

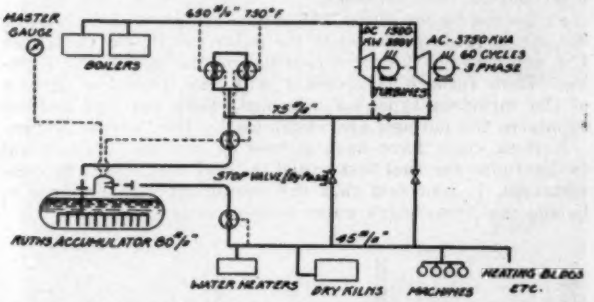


Diagram showing flow of steam from boilers to process equipment

in the path of the gases. The soot blowing system includes both rotary and stationary elements. The water walls are located on both sides of the furnace proper, and on the front and rear of the hopper bottom. All of the exhaust gases of the furnace pass through the Edge Moor tubular air preheater where practically all of the air used in combustion is heated.

The total heating surface in each boiler proper is 13,460 square feet. Of this total surface about 8,730 square feet are in the heater section. The water walls cover approximately 1,385 square feet, and have a total heating surface of approximately 12,000 square feet. The steamer section contains 3¼-inch tubes, while the heater section utilizes 2-inch tubes and the water walls 4-inch tubes. The water storage space in the heater section is 331 cubic feet, the steamer section 794 cubic feet, and the water walls 364 cubic feet. The air preheater, built by Edge Moor, contains 2½-inch tubes which have a total surface area of approximately 15,200 square feet.

The size of the furnaces may be more fully appreciated by stating that on December 20, 1928, the Robinson Cary & Sands Co. of St. Paul, Minn., sales representatives for a number of firms supplying equipment for this plant (including the Edge Moor boilers), entertained over 300 people at a buffet luncheon in the combustion chamber of the first boiler unit to be completed. The chamber was sufficiently large so that about 30 people were served at one time.

A Cochrane steam purifier, a Copes feed water regulator, and a Mercon pressure governor constitute auxiliary equipment to each boiler. The Mercon pressure governor precedes the Copes regulator in its respective system. Bailey instruments are used to record the flue gas temperature as it enters and leaves the air preheater of each furnace, as well as to record the temperature of the air entering and leaving the preheater, the temperature of the superheated steam, the

flow of steam and the flow of air. Various draft gauges are also employed to check the draft losses in each boiler installation.

Each of the two boilers is fired by means of two Unipulvo unit pulverizers manufactured by the Strong-Scott Mfg. Co. Each pulverizer has a rated capacity of 12,000 pounds per hour with a reserve or overload capacity of 3,000 pounds additional, and is driven by a 125 hp. motor. This motor, in addition to supplying power for pulverizing, furnishes power for handling all primary and secondary combustion air through the mill with the coal. A fifth pulverizer is located between the two Edge Moor boilers. This pulverizer has a capacity of 1,500 pounds per hour, and is connected in such a way as to serve either furnace. Such a unit is used for warming up a furnace, for starting the boilers, and to hold a fire on extremely light loads, loads such as would occur on Sundays and holidays and then especially during the summer.

Since each of the five pulverizers is of the self-contained unit type, with the pulverizing rotor and air handling fan mounted upon one shaft, no auxiliary air handling equipment is necessary. Neither are magnetic separators required at any stage in coal handling, because this type of pulverizer is not affected by foreign material of either magnetic or non-magnetic nature. Incoming raw coal is swept over a bed of coal lying dormant in the bottom of the grinding chamber, and pulverizing is effected by the attrition action of coal-on-coal with a wide clearance between the revolving rotor hammers and the fuel bed below.

Preheated air at about 300° Fahr. is drawn directly from the tubular type preheater to the pulverizer by the pulverizer fan, and conveys the pulverized fuel to the furnace for burning. Each furnace is provided with two Unipulvo burners of the turbulent type, water cooled. Both the fuel and air supply to the burners are controlled by the Carrick system.

Various coals have been burned in the new boiler plant to determine the fuel best suited to local conditions. In some instances, it was said that the equipment was required to handle coal from which water dripped away freely.

One boiler unit fired at an average rating of 300-350 per cent meets all of the present power and process steam demands of the plant. It should be mentioned that the entire installation has been designed with sufficient margin to permit each boiler to operate continuously at 450 per cent of rating.

Additional equipment of the boiler plant includes two Reilly heaters, two Griscom-Russell bent tube type evaporators, Cochrane deaerating heater, a Griscom-Russell open type heater, two Cameron multistage boiler feed pumps, a Ruth steam accumulator and other auxiliaries.

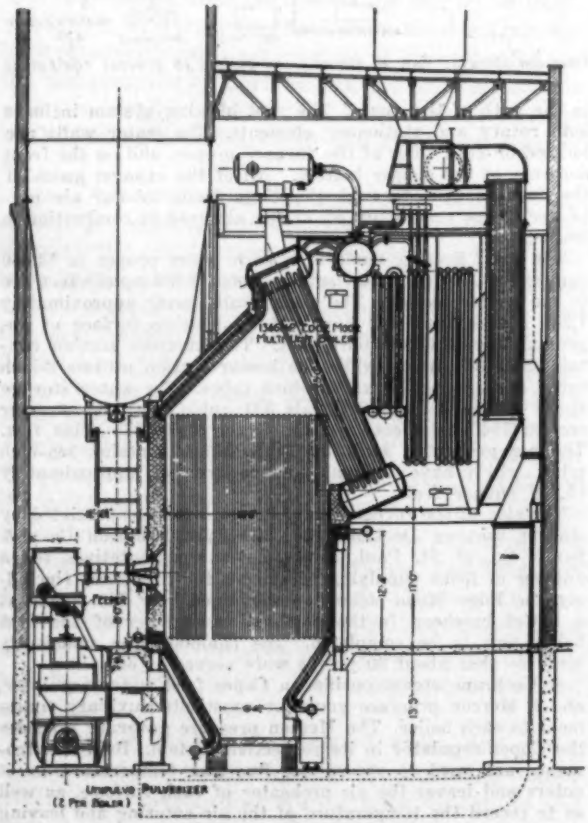
Such fresh water as is required for make-up enters the Griscom-Russell open type heater, where it is heated before passing to the bent tube evaporators. The vapor from the evaporators is delivered to the Reilly heaters, where it is used to heat back-water or white-water from the manufacturing processes. The condensate from the Reilly heaters is discharged into the Cochrane deaerating heater along with the condensate from the entire paper mill. The deaerated water is then delivered to two Cameron multistage boiler feed pumps, each with a capacity of 275 g.p.m. and operating under 800 pounds pressure for delivery to the boilers.

The black or white water from the paper machines as, mentioned previously, is used to condense the evaporator vapor in the two Reilly heaters. Special precaution was taken in the design of the heaters to eliminate any problem of cleaning.

Piping Identification

A special color scheme has been used throughout the power plant for easy identification of piping. All cold back-water piping is painted light green, while all hot back-water piping is painted dark green. Light blue is used for the cold fresh water lines, while dark blue is used for the hot fresh water lines. All condensate lines are painted purple.

Other color schemes on piping include maroon for turbine exhaust up to 75 pounds; orange for accumulator discharge; yellow for evaporator vapor up to 15-20 pounds; cream for



Elevation sketch of power plant

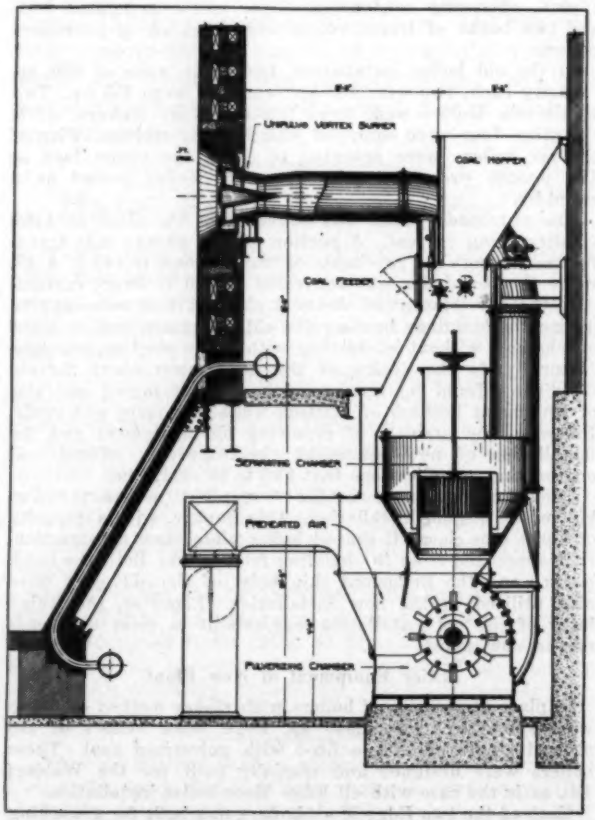


Diagram showing functioning of pulverized fuel system

the evaporator vapor from the first effect evaporator when the evaporator units are operating double effect, and black for all sewerage lines.

Steam Accumulator and Turbogenerators

The steam generated in either of the Edge Moor boilers at 650 pounds pressure and a total temperature of 750° Fahr. (250° superheat) is delivered to two Westinghouse turbogenerators. Installed in the line with the boilers and the turbogenerators is a Ruth's steam accumulator. This accumulator has a capacity of 12,000 cubic feet and is said to be one of the largest units ever built in the United States. The accumulator is 16-ft. in diameter and 65-ft. long. It has been built for a maximum working pressure of 82 pounds. Through the installation of the accumulator, fluctuations in steam demand are absorbed. The boiler pressure is also automatically kept constant, and the steam from the boiler not required by the turbines is by-passed to the accumulator. Likewise, a constant turbine exhaust pressure, set at any point between 75 pounds and 60 pounds, and a constant pressure in the process steam line which is set at any desired point are maintained. In addition a balance between power and steam demands is maintained, steam for process work is desuperheated, and sudden demand for process steam or storage of surplus steam is immediately handled.

The steam supply from the 650-pound line to the turbines is regulated by speed governors. The steam not required by the turbines passes through one of two overflow valves to the turbine exhaust line. The pressure in this line is kept constant by means of an overflow valve through which all of the steam supplied to the line is passed to the accumulator and in turn to the process steam lines.

The arrangement of the accumulator in relation to the boilers, turbines, and process equipment is clearly illustrated in the accompanying sketch.

One of the Westinghouse turbogenerators is a direct current unit with a capacity of 1,500 kw., 250 volts. The other unit, a three phase 60 cycle generator operating at 3,600 r.p.m., has a capacity of 3,750 kv. a. The D. C. unit was the first of the two units to be installed. As soon as it was installed, the old engines were removed and the second turbogenerator placed into position. Both of the turbogenerators are of the non-condensing type. The turbine of the D. C. unit exhausts at 65-75 pounds, while the turbine from the A. C. unit exhausts at approximately 45 pounds. This exhaust steam is used for all process work including the drying, heating of buildings, heating of water, operation of dry kilns in binders board plant and insulation plant. The insulation board produced by this organization is sold under the trade name of Thermoboard and Thermolath. What additional process steam may be required is supplied directly from the boilers after its pressure and temperature has been reduced by means of the Ruth's steam accumulator system.

One of the interesting features in the turbine installation is the method employed for sealing the glands. A separate closed system which was originally filled with distilled water is employed. In operation, the distilled water is pumped through a Griscom-Russell multiwhirl cooler where the temperature of the water is reduced. This cooled water then passes to the sealing glands of the turbines, where it condenses a certain amount of steam in the glands. This water then passes to a storage tank before being recirculated through the cooler. The small quantity of steam condensed along with the cooling water in the glands makes it unnecessary to ever add any distilled water to the system. In fact, there is always a small continuous overflow from it.

Another interesting item of equipment in the power plant is a Westinghouse motor generator set which is arranged to take alternating current and transform it to direct current or vice versa. The D. C. end has a capacity of 600 kw., while the A. C. end is 1,000 kv. a. at 69 per cent power factor. This installation is used for raising the power factor of the whole plant, and also for operation on Sunday, or at any time when one of the turbines might be out of service.

All changes in the electrical system, including switchboard and control equipment, in the power plant was furnished and installed by Westinghouse Electric & Mfg. Co.

An Ingersoll-Rand air compressor, direct connected to an engine type 350 hp. Westinghouse synchronous motor, was also installed in the new plant. This unit has a capacity of 2,100 cubic feet of free air per minute and discharges at 110 pounds pressure. This air is used for pumping fresh water from the well, and for operation of air hoists and other miscellaneous tools. This unit was installed in the turbine room along with the old steam-driven compressor which is now being used simply as a stand-by.

Results of Power Plant Changes

The installation of the new power plant, with an approximate total cost to date of $750,000, has made possible an increase in production from 150-160 tons per day to over 260 tons per day. The daily production now approximates 225 tons per day. This increase has been accomplished with

View showing interior of furnace looking up from grate level

comparatively little additional process equipment. The beaters were rebuilt, and three new jordans were installed. Present plans include some minor changes within the paper mill to permit even greater production. The results of the new power plant met all expectations within the first month of operation.

The credit for this interesting power development, in which by-product power is used exclusively for operating process equipment, is due to Mr. L. A. Breneman, a member of the A. S. M. E. and assistant general superintendent and chief engineer of the Waldorf Paper Products Company. He has been responsible for the engineering of the entire project even from its very inception. In fact, Mr. Breneman was responsible for the original analytical study which showed the advisability of making the present changes.

Brown Instrument Co. Opens New Building

The Brown Instrument Company, Philadelphia, has just completed a 60 per cent addition to its factory buildings, the opening of which was celebrated by giving a party to between six and seven hundred employees and friends.

The Brown Instrument Company was founded in 1860 by Edward Brown, engineer and inventor. At that time, manufacturing processes depended almost entirely on the practiced eye of the individual factory worker. Only the crudest means were available to measure temperature. To-day, this company employs a force of over 500 people and does a business well over $3,000,000 annually.

A New Pacific Coast Paper Mill

Details of the Construction and Operation of Grays Harbor Pulp & Paper Company's Mill at Hoquiam, Wash., in Which Hammermill Paper Company Is Heavy Stockholder

THE Grays Harbor Pulp & Paper Company, of Hoquiam, Washington, with offices at 534 Battery Street, San Francisco, is one of the new Pacific Coast enterprises in which a paper mill is operated in addition to a sulphite mill. The Hammermill Paper Company, of Erie, Pa., is a large holder of the stock of the company, and a few of the key men of Hammermill are in charge and directing operations at Hoquiam. All of the paper produced at the mill is disposed of through the sales force and agents of the Hammermill Paper Company.

The first dirt was turned in the construction of the Hoquiam plant of Grays Harbor Pulp & Paper Company, September a year ago, the mill having been designed and built under the supervision of V. D. Simons, Inc., paper mill engineers, of Chicago. The pile driving was completed in November and the concrete construction followed immediately after.

The paper mill adjoins the sulphite pulp mill which was practically completed when the construction of the paper mill was begun. In planning the building of the pulp mill, arrangements were made in the power plant for the construction of additional boilers and turbines to supply the extra power necessary for the paper mill. In the same way the waterworks connections were adjusted and made sufficiently large to provide for increased demands when paper manufacturing operations were started.

As will be perceived from the accompanying aerial photograph, the location and design of the mill are such that pulp from the pulp mill can be pumped to stock storage tanks alongside the beater room. When the finished paper is ready for shipment, it can be moved without delay to the dock for carriage by water, or to cars for general freight distribution, as the finishing room opens on to both railroad sidings and wharves.

Reinforced concrete has been used throughout in the construction of the buildings, with the exception of the roofs which are of wood supported on steel trusses.

As the main operating floor of the plant is sixteen feet above the natural ground level, the driving apparatus and stock storage chests are built on the ground floor.

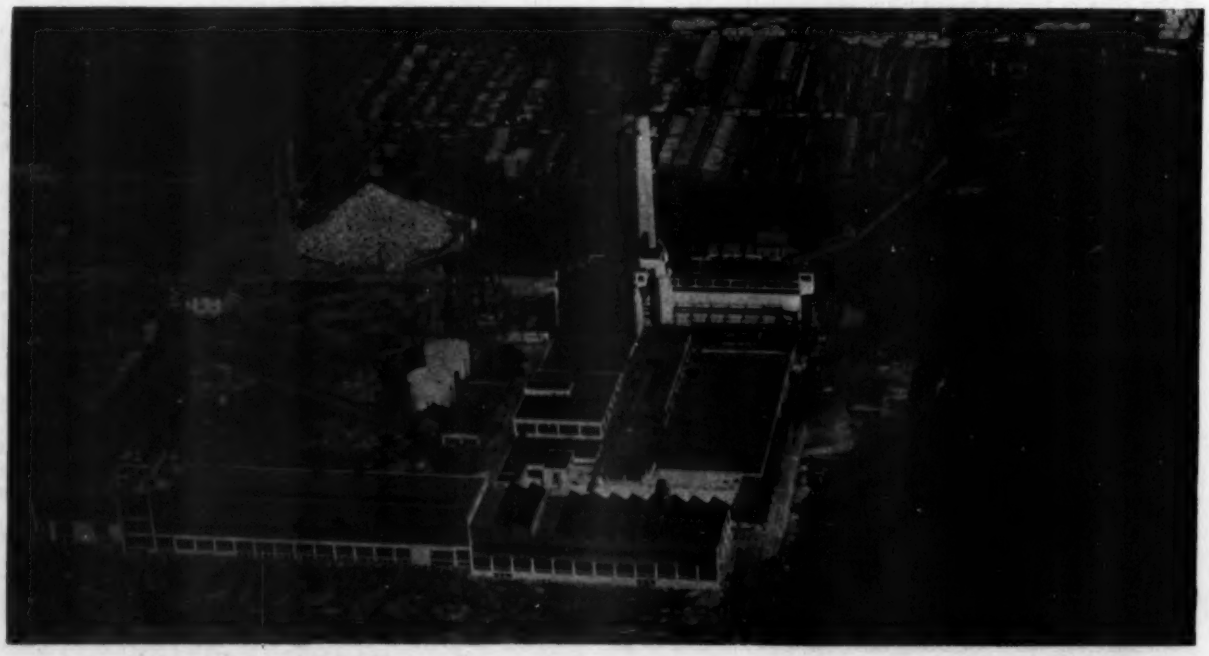
The stock from the pulp mill is thickened in the beater room by means of deckers, the thickened pulp being passed into the beaters through a worm conveyor. The beating engines, numbering eight, were made according to special designs by E. D. Jones & Sons Company, Pittsfield, Mass., and their concrete tubs are lined with tile. After the stock is beaten for the required length of time it is refined in jordans, also of E. D. Jones & Sons Company construction.

The paper machine illustrated in the accompanying reproduction from a photograph, is of new and novel construction, being equipped with a number of interesting devices and parts. Thus the fourdrinier part is Beloit's latest design of the shaking removable type, with a wire of 202 in. face width and 90 ft. long.

The suction roll is another Beloit product of patent design constructed in such a way so as to provide an easy and ready means of changing the wires. The table rolls are of remarkably light construction, and these and all other rolls on the machine are equipped with Timken antifriction bearings. The wet end of the machine is the product of the Beloit Iron Works, Beloit, Wis.; the dry end was built by the Bagley & Sewall Company, Watertown, N. Y.

The paper machine has three press rolls, through two of which the paper passes straight ahead, but is reversed when going through the third press. Automatic carriers take the paper from the second press through the third press to the smoothing press. The top press rolls are of granite, while the bottom ones are covered with rubber.

The machine is equipped with a Westinghouse sectional



Airplane view of Grays Harbor Pulp & Paper Company's mill at Hoquiam, Wash.

General View of machine room at Grays Harbor

General view of finishing room at Grays Harbor

electric drive. A peculiarity of the dry end is that the five-foot dryers, of which there are forty, are driven with a special gear arrangement that permits the back side of the machine to be practically as open as the front side. The dryers, felt rolls, etc., are carried in Timken roller bearings. The dryer felts are divided, each of the two felts on the wet end being provided with two felt dryers and each of the felts on the dry end with one felt dryer. These felt dryers are mounted in Timken roller bearings and are driven by the felts.

Further equipment at the dry end includes an eight calender stack, having standard bearings of the ring oiling type. The reel and winder are of Bagley & Sewall Company construction and comprise a uniform speed reel and a high-speed two-drum winder.

The rolls of paper from the winder are taken to the finishing room where the paper is cut on Hamblet cutters equipped with lay-boys and Maxon counters. After sorting, the paper is trimmed and cut to size on Seybold cutters. This paper is ream sealed and packed in bundles or cases, ready for either rail or water shipments.

Investigations by Bureau of Standards

Moisture Content of Felt Rags—Arrangements have been completed for finding the moisture content of the various grades of rags used for making roofing felts and other similar products, at different humidities. This work is to be done in co-operation with the Technical Committee of the Felt Manufacturers Association and was undertaken at their request. They require the data to fix an equitable moisture-content basis for purchase specifications. The moisture content of fifty samples of rags will be determined at a constant temperature of 70° Fahr. and at relative humidities of 50 per cent, 65 per cent and 98 per cent.

Deterioration of Paper—Chemical accelerative factors in the deterioration of paper are apparently acidity of paper and air in contact therewith, oxygen, and catalytic effect of the paper itself. There is some evidence that paper, deterioration is autocatalytic in nature. Because of these last two factors, it is important to know the relation between the measured area of a piece of paper and the actual (contour) surface of paper which this measured area represents. A method for determining this ratio has been devised and preliminary tests yield promising results. For every cubic foot of air in contact with paper, there are apparently 70,000 times as much oxygen-surface as true paper-surface, which increases the probability of catalytic-effect of paper-surfaces in contact with deteriorative gases. Specimens for cross-section photomicrographs, as well as a special device for measuring contour-surfaces are in course of preparation.

Tests were made on three rosin-sized papers having various degrees of acidity. The papers were made in the bureau experimental paper mill from purified wood fibers. Runs 766, 771 and 772 were identical except for the hydrogen ion concentration of the stocks, which were 4.4, 5.5, and 6.5 respectively at the head-box. The regular physical and stability tests were made, also the usual chemical tests.

It was found that sample 766, having the highest acidity, is also the least stable of the three papers. Lowering the acidity was found to have increased the stability markedly. Evidently, it is extremely important to control carefully the pH of stock for permanent papers. Only the smallest amount of alum necessary for the required sizing quality should be used. It is probable that commercial mills could improve the permanence qualities of their papers by regulating the acidity more carefully, and without losing sizing quality. Sample 771, which had an acidity of 4, and a pH of 5.5, much lower than usually encountered in commercial papers, was remarkably resistant to the heat test, and yet was satisfactorily sized. Sample 772, even more stable, did not appear to be sufficiently well sized. Therefore, 5.5 is probably about the right hydrogen ion concentration in this type of stock to obtain the best combination of sizing quality and stability.

Investigation of Postage Stamps—The study of resistant envelope papers has been continued. The object is to find, if possible, the factors that have the most important effects on the adhesion of stamp gum. Several thousand envelopes taken from the incoming mail have been examined and the most resistant types are being studied, particular attention being given fiber composition, surface finish, nature of sizing, and degree of sizing. Results indicate that the adhesion of stamp gum depends in no way on the fiber composition, but that it does depend on the nature of the sizing material, degree of sizing, and surface finish. All papers surface sized with starch sizing have been found extremely resistant. Nearly all of the other resistant papers found were high-finish bond papers having a high degree of rosin sizing. It is believed that these two types of paper are the principal offenders as regards the shedding of stamps. Various modifications of the stamp gum are being tried in an effort to develop a gum that will stick to all types of paper.

Dirt Count of Rag Half-Stuff—As an aid in minimizing the dirt content in the finished paper, it is common mill practice in the manufacture of fine wood-fiber papers to make test sheets of the wood pulp and count the dirt specks in a given area. In the case of rag fiber as prepared for beating, commonly termed half-stuff, such determination is more difficult as owing to the comparatively greater length of the unit constituents of the material, it tends to form a lumpy and irregular test sheet. At the request of a rag-paper manufacturer, experiments were made on the preparation of a suitable test sheet. It was found that the half-stuff could be defibered sufficiently in water, with a high-speed agitator, to permit the formation of a satisfactory sheet with the ordinary type of test-sheet mold.

Superintendents Meet at Washington

Penna.-New Jersey and Southeastern Divisions of American Pulp and Paper Mill Superintendents Association Hold Notable Convention at Wardman Park Hotel

THE joint convention of the Pennsylvania-New Jersey Division and the Southeastern Division of the American Pulp and Paper Mill Superintendents' Association at Wardman Park Hotel, Washington, D. C., on Friday and Saturday, October 18 and 19, was a brilliant success, being attended by a large representation of members who were accompanied by more than the usual number of ladies. The arrangements for the meeting were in charge of E. C. Gildenzopf, of the Congoleum-Nairn Company, Asbestos, Md., and J. Bertwell White, of the National Vulcanized Fibre Company, Yorklyn, Del., assisted by the officers of the divisions, consisting of J. E. Blosser, chairman of the Pennsylvania-New Jersey Division; William H. Brydges, chairman of the Southeastern Division; B. K. Steadman and Charles L. Ellis, secretaries respectively of the two divisions named.

There was an all-day session for the reading and discussion of papers on Friday, with a banquet in the evening. Saturday was devoted to sightseeing and a visit to the mill of the District of Columbia Paper Manufacturing Company. The motor tours of Washington were greatly enjoyed, stops being made for an inspection of the Lincoln Memorial and the United States Bureau of Printing and Engraving, during the forenoon, with visits to Mount Pleasant, Georgetown, Fort Myer, Arlington National Cemetery, Tomb of the Unknown Soldier and Potomac Park and Speedway, in the afternoon.

Impressions of the Lincoln Memorial

A group of members and visitors was photographed in front of the Lincoln Memorial, a reproduction of which appears elsewhere. The Lincoln Memorial is one of the most beautiful buildings in the world. The exterior of the Memorial symbolizes the union of the United States of America, the names of the thirty-six States existing at the time of Lincoln's death being chiseled on the frieze above an imposing colonnade. A remarkable life-like statue of Abraham Lincoln, showing him seated in a chair, occupies the center position against the wall and above it is carved an inscription reading: "In this temple as in the hearts of the people for whom he saved the Union the memory of Abraham Lincoln is enshrined forever." On massive stone tablets to right and left of the seated figure are carved the texts of the Gettysburg Speech and the Second Inaugural Address. A long pool to the east of the Memorial reflects the Memorial at one end and the Washington Monument at the other, but on the occasion of the superintendent's visit it had been drained of water. Several of the visitors observed the remarkable resemblance which this feature of the Memorial bears to the famous Indian mausoleum known as the Taj Mahal, a building of white marble built by the Mogul emperor Shah Jehan at Agra, near Delhi, as a tomb for his favorite wife. A canal of dark water reflects the whiteness of the mausoleum, and it is believed that the pool in front of the Lincoln Memorial was suggested by the reflecting basin of the Indian Monument.

Elaborate Program

Registration for the meeting began on Thursday evening, with Mrs. Joseph H. Dow presiding at the desk, as she always does at a meeting of the Penna.-New Jersey division, and continued on Friday morning and evening until 100 or more men and women had signed up. An elaborate program or convention schedule was provided. In addition to lists of papers and their authors, this contained the menu of the evening banquet, the four-page folder on heavy tinted paper containing artistic representations of the early Egyptian era of papermaking, with line drawings of the papyrus plant, a sketch of slaves pressing papyrus sheets and border designs of dusky Egyptian beauties, and dancing girls and musicians.

The business sittings were held in the auditorium of the Wardman Park Hotel. This resembled the interior of a theatre, having stage and footlights, and the acoustic properties of the hall were excellent. J. E. Blosser, chairman of the Pennsylvania-New Jersey division, opened the meeting, giving place later to William H. Brydges, chairman of the Southeastern Division.

Welcomed by Chamber of Commerce

The meeting was opened with an address of welcome by Charles W. Darr, president of the Washington Chamber of Commerce, who extended the greetings of the 1,500 members of the chamber. He said that most of the visitors to Washington had the mistaken notion that Washington, D. C., was wholly a residential city, whereas it was really a great industrial center, and the coming week would witness the opening by the Washington Chamber of Commerce of the Fifth Exposition of Industries. It was also a popular fallacy that all residents of Washington were employed by the Government and this he sought to explain away by instancing several of the big industries of the District, including that of papermaking. He again welcomed his audience to what he termed the greatest city in the world and congraulated the members on holding their meeting in it, expressing the hope that the next national meeting might be held in Washington. (At the meeting of the National Executive Committee held at the close of the joint convention, it was decided to hold next year's meeting of the national association at Philadelphia on May 29, 30 and 31.)

President Ramsey Responds

Chairman Blosser called on National President James G. Ramsey to respond for the division, which he did in an eloquent manner, expressing the gratitude of the members both for the warmth of the welcome extended by the Washington Chamber of Commerce and the arrangements made by the local people for the comfort and entertainment of the visitors. Prior to the organization of the Superintendents' Association, there was no opportunity of establishing contact with the outside world, except through the intermediation of traveling salesmen. He spoke of the interesting and beautiful things that were to be seen in Washington and told a story relating to the thousands of visitors who flocked to Washington in the early days of spring to view the Japanese cherry trees in blossom on the White House grounds. On one occasion while he was observing this wonderful sight he overheard an old man in a crowd saying, "Yes, they are very beautiful, but we must remember they bear no fruit." Applying this remark to the present convention, he said that though it was fine to attend meetings and go sightseeing, there were other things to be done, and the members must bear fruit by taking back something of benefit to the firms in whose interest they attended the meeting. He suggested a rising vote of thanks to Mr. Darr which was immediately put and carried with acclamation.

Nominating committees were then appointed by Chairman Blosser for the Pennsylvania-New Jersey Division and on behalf of Chairman Brydges for the Southeastern Division, following which Secretary Eminger announced the presentation of a paper by L. D. Nicholson, of the District of Columbia Paper Manufacturing Company on

Co-operation Aided by Meetings of Pivot Men

Mr. Nicholson first expressed the pleasure it gave him to welcome the superintendents to Washington, the home of the District of Columbia Paper Manufacturing Company, and invited all to visit the plant which is a specialty mill making

stock cover paper, blotting paper, box paper and papeteries, as well as photomounts, calendar paper and greeting card stock. The production amounts roughly to fifteen tons a day.

A soda mill operated in conjunction with the paper mill produces 90 per cent of the pulp used, two grades of wood being cooked—poplar, gum and sycamore for the short fiber pulp and pine for the long fiber. Some sulphite, rags, linters and old papers are purchased.

The paper mill is equipped with two papermaking machines—a fourdrinier and a cylinder—seven beaters and five jordans. Half of the paper made goes to the firm's converting plant where it is decorated, pasted, embossed or plater finished. To operate these departments a larger staff of supervisors is employed than is the case with a mill shipping most of its product as it comes from the machines.

Co-operation Through Pivot Men—Co-operation between the different departments is effected by means of what he termed "pivot men," leaders in their department. Letters are mailed weekly to these men, signed by the general manager, inviting them to meet and discuss the messages contained in them.

Those attending such meetings included the general manager; the assistant general manager representing the office; the chief chemist representing the department of technical control; the superintendent and assistant superintendent covering operations in general; the chief inspector; the foremen of the decorating department; the boss finisher, covering, pasting, embossing, plating and finishing in general; the master mechanic in charge of maintenance and new projects; one of the paper mill tour bosses, and most important of all, as Mr. Nicholson said, one of the paper mill tour bosses and a machine tender from each machine and his beaterman.

Men Attend Meetings on Their Own Time—The meetings are held on Tuesdays at 1 o'clock. The shifts change at 3 o'clock, so the pivot men due to come to work at 3 o'clock are at the meeting at 1 o'clock on their own time. Meetings are opened by the general manager or the assistant manager who gives a short talk on general conditions and then calls on the chief inspector, a man who has been with the mill for thirty years and was formerly general superintendent. He brings to the meeting a resumé of the week's work, skips rapidly over the runs which were O. K. and then presents in order each run in which trouble has developed. This starts a general discussion which brings out worthwhile suggestions. Although his report is presented after the base paper has been made, it comes before the paper goes to the converting departments.

Things Discussed—He warns the different departments of runs which may contain color variations, weight variation or anything which must be looked out for so that it will when finished reach the customer without a chance for complaint on his part. His report covers paper made but not converted so that the departments which will handle the paper later are warned in case of possible trouble.

New Projects and Complaints—After his list of runs has been gone over and discussed the superintendent takes up special runs which have been made recently and points out whether the desired results have been obtained. This is to keep all of the men informed of the results of their efforts. Any one who has worked on a job is naturally interested in the results. The superintendent then outlines new projects, special runs being detailed so that all departments may know what is expected of them and just what results they should obtain. He brings, up all complaints from customers from which information can be gathered to aid in future runs. If the men feel that they have done their best under the conditions it is so stated, but the cases are few and far between in which they do not feel that they could have done better.

Mr. Nicholson said that before the practice of holding meetings had been started, the men in the converting departments would frequently voice their opinions of the paper among themselves, but the word would not always get back to the papermakers. Now, troubles are discussed with the papermakers, face to face, and each group becomes more conversant with the others' troubles.

Comparing Results—As to results, the best measure of these was, he said, the monthly report brought in by the boss finisher. This gives the amount of paper handled by each machine and the amount and proportion of waste for the past month. The reports of preceding months are then compared to determine whether progess was being made. The work of each machine in regard to percentage of waste is studied. If 7 per cent waste has been recorded for several months suggestions are asked for with a view of reducing the amount and this seldom fails to improve conditions.

Picture of group in front of the Lincoln Memorial, attending joint convention of the Penna.-New Jersey and Southeastern Divisions of the Superintendents Association, held in Washington, D. C., October 18 and 19, 1929

Mr. Nicholson said that as a result of the co-operative spirit engendered by pivot meetings waste had been reduced 60 to 70 per cent. Each department gets to know what is expected of it, how it can help the other departments and how it can help itself.

Points Discussed

Mr. Nicholson's paper was discussed briefly by former President Rooney and R. J. Sprang. In response to Mr. Rooney, Mr. Nicholson said that letters sent to employees in connection with meetings were signed by the general manager and sent to the home addresses of the men.

Mr. Rooney asked Mr. Nicholson to define what he meant by "waste", and was told that waste was based on pounds of paper delivered compared with what should have been delivered.

Mr. Sprang asked if the men were rewarded for their efforts to prevent waste, and was told it was a question of the man holding his job, no reward being offered.

Use of Bandless Jordan Plugs

Henry Bert, superintendent, Monroe Paper Products Company, Monroe, Mich., was on the program for a paper on "Use of Bandless Jordan Plugs", or "We used to tear 'em out, but now we wear 'em out". He explained that his article appeared originally in a boxboard magazine but that certain omissions had been made in it which included specifice mention of certain features of the bandless type jordan plug. Mr. Bert did not stick closely to his paper, deviating from the text in instances to give intimate details of his experiences. He submitted and had passed around among the audience some pieces of wood filling taken out of a jordan that had been given to particularly hard usage. Although pieces of metal from office clips, stitching wire, and bottle caps were still sticking to the wood, the wood itself was as sound as when it was first put into the plug.

Savings Effected—As an instance of how the expenses of running a jordan had been cut down since the adoption of the bandless jordan plug, he said that during the latter half of 1927 the cost of jordan fillings amounted to 27 cents per ton of board. Early in 1928 the mills started putting in the bandless plug and by January 1, 1929, all of the old-style plugs had been replaced. During this period of a year, the cost of jordan fillings had been lowered to 20 cents per ton and the cost for nine months of 1929 was only 11 cents per ton, which was expected to be reduced to 9 cents for the entire year. Production had also been increased and without any increase in power per ton. Thus during the last six months of 1927 production was 95 tons a day and during 1928 it rose to 106 tons, while for the nine months of 1929 production had increased to 115 tons.

Earlier in his paper, Mr. Bert discussed the cause of the wood filling breaking out between the bars, a fault common to the ordinary type of jordan plug. Some men blame high speed for this and others say the cause is the water becoming too hot and swelling the wood. No trouble of this kind had been experienced since the bandless plug made by the Bolton Manufacturing Company had been used. The design and construction of this plug, Mr. Bert said, made it impossible for the wood to become loose or burst out from between the bars and it was therefore impossible for the knives to be torn out.

Advocates Thicker Knives—Mr. Bert is an advocate of thicker knives than are ordinarily used. An argument against the use of thicker knives is the alleged increase of power consumption, but he said that the effect was just the opposite and he gave the following account of his experience to prove his contention. He said:

"I was operating five No. 2 Miami jordans, each driven with 150 hp. motors. The five jordans were all equipped with knives ¼ in. thick. We then installed a new Emerson No. 1 jordan, a size larger than the Miami No. 2, which was driven by a 200 hp. motor. This new Emerson jordan was equipped with the new Bolton bandless type plug, and the knives are five-sixteenths of an inch thick.

"I am now doing the same work with one No. 2 Miami and one No. 1 Emerson which formerly required three No. 2 Miamis, or in other words, I am saving 100 hp. by using the thicker knives. The five No. 2 Miamis are still being operated very satisfactorily with the new bandless type plug equipped with five-sixteenths inch knives, and we have been able to increase our tonnage on the five No. 2 Miamis fifteen tons a day with the same motors and the same horsepower we were using before this type of plug had been installed.

"When I go to bed now I know that I will not be called on the phone and told that No. 2, 3, or 4 jordan plug has torn out and that they will have to slow the machine down in order to maintain the quality and hold up the tensile strength on the board which is so essential these troublesome days. We are now using all Bolton special bandless type plugs in our jordans. However, we are using Bahr Bros. positive fillings in our shells. This gives us the best combination to withstand the hard usage that is involved in the manufacture of high grade container board."

Questions and Answers

A lengthy discussion of the paper ensued when Mr. Brydges thanked the speaker and invited questions.

J. Bertwell White inquired if the knives had shown any sign of corrosion after use and was told that there was no trace of corrosion observed.

H. T. Randall asked how the knives were removed and what pressure was used in removing them. He was told that the best way was to use a bar and slide it along the sides of the plug which is of cast steel. Three or four sharp blows were sufficient to drive out the plug.

Mr. Randall asked if many refillings were necessary.

Mr. Bert said that the first plug ever used in his mill had just been filled for the third time a week ago and it was still being pushed to capacity.

H. W. Server asked how many chippings the jordan was given and was told that the jordan was never chipped. When the filling is first put in it is trimmed a quarter or three-quarters of an inch.

Carl Magnus asked what change was noted with the use of thicker knives and the reply was that it permitted the jordan to run faster at higher speeds. Mr. Magnus said that with the special bronze used in his jordan, three years use of a jordan plug was obtained with only two chippings.

Best Speed—Mr. White inquired at what speed it was best to run the jordan and Mr. Bert said it depended a good deal on the grade of board that was being made. With his No. 2 Miami jordan the rate of speed was about 400 r.p.m. but the larger Emerson makes only 350 r.p.m.

J. G. Madore, District of Columbia Paper Manufacturing Company, asked what was done with the beater when groundwood pulp was used. He said that on their container board containing about 25 per cent kraft it runs about 16.6. He asked how much beating was done.

Mr. Bert said that in his mill nine beaters were used and the roll was down as long as the stuff was in the beater. As to speed it depended on the class of old mixed papers used. If the papers are clean the speed is increased, but when they are dirty and can't be hit quite as hard, the beater goes slower.

A. W. Wickham, boxboard superintendent, Mac Andrews & Forbes Company, said that it was expensive, according to Mr. Bert's own statement, to change over from the old jordan equipment. Power should be economized if production is increased and he asked Mr. Bert to inform them to what was due the saving in power and increase of production. Mr. Bert said that with the old-type jordan, one, two or three of the jordans might be off when it was required to run 300 ft. a minute, but he would then go ahead and hit it a little harder with the others. That was how the production was maintained at 100 per cent. Incidentally, he remarked that the filling of the new plug was narrower at the top than at the bottom, the knives being on a straight edge.

P. D. Bradley asked if the new filling was adapted for use with an old plug and was told that it was not.

Mr. Bert asked if there were any boxboard men present and if so would they stand up. There were five boxboard manufacturers in attendance.

Mr. Bert then launched into a talk on the tariff saying that the boxboard industry was in a bad way owing to un-

remunerative prices and steps should be taken to prevent the United States being made a dumping ground for cheap European kraft pulp. He said there was more wood going to waste in Oregon and Washington than is used in the rest of the country and a campaign of education should be undertaken to change conditions.

Carl Magnus Pleads for Educational Work

Carl Magnus considered the question brought up by Mr. Bert as one of the greatest importance but he did not think that relief could be obtained by raising the duty on imported products. What was needed was more publicity in the way of educating the public to the conditions and needs of American paper manufacturers. He offered a motion calling upon the executive committee of the national association to bring to the attention of the American Paper and Pulp Association the advisability of launching a national program of education for the American paper-buying public, but not before calling attention to the lack of intelligent selling on the part of paper producers. In most industries, selling prices were based on production costs and in the steel and automobile business prices go up when production slows down but this is not always true of the paper industry. "The buyer of paper is in the rider's seat and we have been darned fools to let them ride us to a fare-you-well".

After President Ramsey had told of the gratification he felt at noting the desire very generally expressed to "uphold your vocation and gain for it the position it deserves," the motion by Mr. Magnus to support a campaign of education to make the public paper conscious was put, and seconded by H. W. Server, and carried unanimously.

AFTERNOON SITTING

After an adjournment for luncheon, the afternoon sitting was opened by Chairman Brydges at 2:15 o'clock, with the reading of some verses that had been handed to him by Mr. Bert, following which the regular order of business was taken up and W. L. Glass, of the Tolhurst Machine Works, Troy, N. Y., was introduced to present his paper on "Cleaning and Preparation of Paper Stock by Centrifugals."

Operation of the Tolhurst Centrifugal

Mr. Glass had provided each member present with a four-page folder containing a general description of the Tolhurst centrifugal machine which is designed for the cleaning and preparation of paper fibers.

A rough representation would show the Tolhurst to be a machine composed of a suspended metal basket, open bottom and driven by an overhead direct-connected motor. The stock as delivered to this basket through a charging pipe comes in contact with the basket bottom, when the centrifugal forces whirl it into the form of a hollow cylinder. In practically all cases, the specific gravity of foreign material in stock is greater than the fibers. This causes the foreign material to be forced to the outside of the whirling cylinder of stock against the wall of the basket where it is collected and held by baffles. Light foreign material is kept to the inside of the whirling cylinder where it is skimmed off and held back by another baffle. The center of the whirling cylinder represents clean stock which is passed from the revolving basket to a stationary collector. In passing over the various baffles, the stock is subjected to a brushing out action which causes fiber bundle separation without shortening the length of the fiber and better hydration, improved formation and higher strength results.

No Possibility of Slime Forming—Mr. Glass said that the stuff moved through the centrifugal at such a high velocity that there was no opportunity for the formation of slime and it was thus a great improvement over the old-type of rifflers and sand traps where the stock moves so slowly that slime accumulated and fiber also collected in the dead corners. He enumerated the advantages of the centrifugal through its purifying action. Thus with lower grade of furnish, complete dirt removal was effected before the stock went on the wire. Bleach saving was possible, he said, as the purification of half-stuff before bleaching yielded a cleaner, whiter stock and enabled an operator to cut down the amount of bleach used, without affecting the quality of the finished stock.

Production Increased—Claims were made for increased production. It was noted that before installing Tolhurst centrifugals in a certain mill in the East, the average production was 75 to 80 per cent of No. 1 sheets, 10 to 15 per cent of seconds and 10 per cent of throwouts. After Tolhurst centrifugals were installed, the No. 1 sheets ran between 85 and 90 per cent, seconds 5 per cent and throwout 5 per cent. A much better color was also noted and an increase in Mullen pop test from 50 to 80 per cent was obtained.

The Tolhurst centrifugal machine is represented to be an improvement over the Erkensator and it is licensed under the Erkensator patent.

Answers to Queries

In reply to a query by Fred C. Boyce, Mr. Glass said that the Tolhurst would eliminate screens for certain papers. With sulphite or rope where cleanliness is not so essential a screen was unnecessary but in running a sheet with a long fiber it might be advisable to use the screen as an auxiliary.

L. D. Nicholson asked how the machine would operate on a paper that was heavily charged with loading material, and was told that the clay and other loaders would be held in suspension and not extracted by the operation of the Tolhurst, but Norman Clark said he failed to see how the machine could differentiate between clay and dirt. Mr. Magnus also brought up this question of the danger of loading being thrown off or extracted by the operation of the machine. He asked Mr. Glass if what he had said on this subject was based on theory or practice and was told that it was not a theoretical conclusion. Mr. Glass said he asked the same question and had determined that there was no loss of loading.

Mr. Glass said that the price of the unit was $4,200 and it had a capacity of 400 lbs. an hour. The machine weighed 7,500 lbs. The basket was referred to as the "keynote" of the machine. This was made of bronze or fabricated copper. Mr. Nicholson asked if the machine had to be changed when a shift was made from rag to wood stock and was answered in the negative.

V. S. Denison Describes a New Papermaking Machine

After thanking Mr. Glass for his talk, Chairman Brydges called on V. S. Denison, of the Paper & Textile Machinery Company, Sandusky, Ohio, to present his paper on the new Millspaugh papermaking machine which forms stock into paper by suction rather than by flowing stock on a wire after the manner of a fourdrinier machine. Among the advantages claimed for the new machine is economy of space by the elimination of the fourdrinier or wet end of the machine and press parts. The machine is built on the principle of sucking the fiber onto short fourdrinier wires and drying them by vacuum in the travel of the wire. The forming rolls are suction rolls on which a short fourdrinier wire travels. The stock from a small headbox flows against this wire and formation takes place immediately, while another compartment in the suction forming mould dries the sheet. The machine is built in such a way that single, duplex or triplex paper can be run according to the number of forming moulds operated. Duplex paper can be made with either two wire sides out or two felt sides out, insuring both sides being exactly alike.

The text of Mr. Denison's paper appears on another page of this issue. There is also a brief abstract of the Millspaugh patent in Technical Developments on another page.

Members Discuss the New Machine

There was an animated discussion of Mr. Denison's paper.

H. W. Server asked if the machine was intended to displace either the fourdrinier or the cylinder machine and was told, "either or both."

Mr. Denison said that either a fourdrinier or cylinder formation could be produced of one, two or three plies and it was the Paper & Textile Machinery Company's idea that newsprint would be made from two-ply sheets which would be stronger and run in the printing presses better.

Mr. Server put the supposition that if one wire was used and run at 750 ft. the fibers would have a tendency to run in one direction. Mr. Denison admitted there was a tend-

ency of that kind but means could be taken to cross the fibers by agitation where the paper is formed. He said the wires were 23 ft. long, having to be made long enough to get a stretch. Just how much under 20 ft. they would eventually be made was a question that had not yet been decided.

The Machine as Seen by a Visitor

Chairman Brydges remarked that when he had visited the paper mill of the Paper and Textile Machinery Company at Sandusky, Ohio, ten days ago a sheet of sulphite weighing 480 lbs. was drying on the equipment—two wires, two vertical boxes, 32-inch suction. At the top, the headbox comes to about the top of the suction roll and when the stock is fed no water is visible. A suction roll in the box where both sheets meet these fourdriniers runs at the same speed; the suction roll picks the sheet off one and transfers it to the other wire where another suction roll takes it off the two wires and passes it on to the press.

The sheet entering the dryer has a moisture percentage varying from 32 to 38 per cent, about 8 per cent dryer than the average of any mill.

R. J. Underdown, of the Heller & Merz Company, made an inquiry regarding color runs. He said it appeared to him that if stretchers were put on the sheet all the color would be pulled off. Mr. Denison admitted that the color does pull out but this could be remedied by making a duplex sheet, putting the two bottoms together and the two tops together.

Mr. Blosser expressed the opinion that the new machine would be particularly good for fine papers, but Mr. Denison said that it was expected that more use for it would develop among other grades of paper. He said that his company was looking at tissue, high-speed tissue, rather longingly, and a considerable tonnage of 18 lb. catalogue paper has been run as a duplex sheet.

Election of Division Officers

The reports of the respective nominating committees of the two divisions were then called for, but only the Pennsylvania-New Jersey Division was ready to announce their selections for officers to serve during the ensuing year as follows:

Penna.-New Jersey Division Officers

J. Bertwell White, Yorklyn, Del., chairman; E. C. Gildenzopf, Asbestos, Md., first vice chairman; Charles Kephart, York Haven, Pa., second vice chairman; William E. Wickham, Camden, N. J., third vice chairman; and J. L. Mullen, Wilmington, Del., secretary and treasurer.

At the banquet in the evening, officers were named for the Southeastern Division as follows:

Southeastern Division Officers

R. J. Sprang, Canton, N. C.; H. W. Deffew, Richmond, Va., first vice chairman; S. C. Foster, Big Island, Va., second vice chairman; W. J. Burns, Hartsville, S. C., third vice chairman; and B. K. Steadman, Richmond, Va., secretary-treasurer.

Chairman Brydges Tells a Story

In introducing Fred Boyce, who was to address the gathering, Chairman Brydges said he had the pleasure of attending the first meeting of the superintendents' association some ten years ago in Buffalo and went on to repeat a story which he had heard there of a man who had picked up a cheap looking glass or mirror and looking at it said: "This is a picture of my grandfather. How did it come here?" The man took the mirror home and showed it to his wife, telling her that he had found this picture of his grandfather while strolling in the woods. She looked at it and said: "Your grandfather, my eye! That's some old bat that you have picked up and been going around with." He thereupon introduced Fred Boyce, but the connection between the story and the introduction was somewhat vague to the audience.

Former President Boyce, who is still spoken of as the "Father of the Association", though he does not himself claim this honor, made a very pleasing speech, giving reminiscences of the origin and development of the association and of his own career. He mentioned by name some of the former presidents and touched upon the difficulty in the early days of getting a superintendent to stand on his feet in the meetings and make a speech, while now he could call on any one of those present and be sure to find him able and competent to express himself in a becoming and convincing fashion.

Others Heard From

National President Ramsey and former President Fred J. Rooney also spoke. Mr. Rooney observed that he had joined the association with some misgiving as to the value of the connection, but he had found that one gets out of an organization what he puts into it or more, which was the case with him he said.

Robert L. Eminger, national secretary, reviewed his connection with the association since the Dayton meeting when he was elected secretary under the presidency of Nelson R. Davis, and expressed his gratitude on his election for a three-year term at the last annual meeting.

Expenses of Meetings

Mr. Eminger gave some information concerning the method that had been adopted in the collection of funds to defray the expenses of the Wausau meeting. The local mills had borne most of the burden, but when the convention was over and all bills paid, 63 per cent of the amount subscribed by the mills was returned to them.

Joe Dow Takes the Floor

After acknowledgments by Chairman Brydges to the local committee, naming Messrs. Blosser, White, Gildenzopf and Steadman, for the success of the meeting, Joseph H. Dow, the well known "Joe Dow", addressed the gathering on behalf of the traveling salesmen in attendance, making acknowledgments for courtesies shown to them by the officers of the association. He said it might be permissible to say that the traveling salesmen put into the association as much as they get out of it, but he could not see how any firm could fail to recognize the benefits that were gained by all from attendance at meetings.

A rising vote of thanks was proposed to the association by R. M. Watts, of the Cheney-Bigelow Wire Works, but Chairman Blosser said the vote of thanks should be passed by the association to the traveling men, and then the meeting adjourned.

Divisional Meetings, Backbone of the Association

In a speech by National President Ramsey at the banquet in the evening, tribute was paid by him to the excellent work of the local committee of arrangements headed by Mr. Gildenzopf and it was in the course of his remarks that he coined the expression, "Divisional meetings are the backbone of our association".

The association was fortunate in having as toastmaster F. Roger Miller, vice president of the company which operates the Wardman Park Hotel. Nearly all the divisional officers had seats at the head table and some of them were heard from before Doctor Hugh P. Baker, star speaker of the evening, was called upon.

Mr. Gildenzopf Shares Credit

Mr. Gildenzopf spoke first and disclaimed entire credit for the success of the arrangements, saying that the hotel management had made matters easy for the committee and he gave special credit to J. Roger Miller who had shouldered most of the work. Mr. Gildenzopf also made grateful expression of his indebtedness to the representatives of the supply houses in attendance for donations to the entertainment fund, mentioning specifically Tom Ireland, of the Crane Company; Mr. Underdown, of Heller & Merz Company; John Dow, of Eastwood Wire Corporation; Walter J. Harte, Noble & Wood Machine Company; R. C. Stewart, Shartle Bros. Machine Company; Raymond Murgatroyd, J. W. Bolton & Sons and R. H. McCain, Frederick Iron & Steel Company. The foregoing were, he said, the men and firms whom the association had to thank for the excellent program of entertainment and sightseeing that had been provided for the Washington meeting.

In introducing Doctor Hugh P. Baker, Toastmaster Miller took occasion to thank Mr. Gildenzopf for his generous references to the hotel management.

Dr. Hugh P. Baker's Address

When Doctor Hugh P. Baker rose to address the gathering he was greeted with cheers from all parts of the hall. He said that he felt quite at home among the superintendents that night, more at home than at any time since he left the central association of the paper industry in New York. He said he felt especially at home when he recognized at the head table the representatives of paper industry periodicals—to use his own words "I feel especially at home when I see Derb and Tom Keenan".

Taking as his text the words "What's Ahead of the Trade Association", he spoke of the good results that came from organized effort, first of all conveying the greetings of the United States Chamber of Commerce with which he is now connected as manager of the Trade Association Department. He described the national chamber as a federated organization made up of some 1,700 local chambers of commerce and national and state trade associations. He said he was tempted to talk to the superintendents as he would talk to any group of business men throughout the country. In reviewing the history of the American Paper and Pulp Association for the past fifty years he said that evidence as to the value of organized effort in the paper industry was different from what had been expected. It had been assumed that fifty years of association work would indicate certain definite and tangible results; that because the association had developed certain statistical reports, had made some progress toward uniform cost methods, trade extension, etc., this would be the case, but the greatest values really lay among what might be termed the intangibles of association work—better acquaintanceship, good fellowship and confidence. This is what the members of associations got from sitting down with their neighbors and competitors, and it led to sounder, better business and business on a sounder profit.

Making a Fetish of Production—Doctor Baker deprecated the present-day tendency to make a fetish, almost a religion, of production and he cited Emerson, who, in speaking of quality in life and the things we do, said the man that made a better mousetrap than any other man would find a path beaten to his door.

Superintendents' Association Here to Stay—Doctor Baker said he was sure from his study of associations that the American Pulp and Paper Mill Superintendents' Association had come to stay and he could see that it would grow in importance with the passage of time. He spoke of the factors that determine prices for pulp and paper and said that the one biggest thing that the association he was addressing could do for the industry it was serving was to assist that industry in developing complete and accurate facts bearing on the industry. With accurate and complete facts from maker to consumer, it would be a comparatively simple matter to determine a production program.

So closed a very sound and well considered address delivered with great force and eloquence. It left the impression on all who heard him that Doctor Baker, who was always sought after to address gatherings of papermakers when he was secretary of the American Paper and Pulp Association because of his ability as an orator has even improved on his delivery and is now a most able and convincing public speaker.

The annual meeting of the Paperboard Industries Association and of the Trade Practice Administration, will be held at the Commodore Hotel, New York City, November 19, 20 and 21, 1929.

General Refractories Co., Philadelphia, Pa., announces that the Desch Supply and Equipment Company, Baltimore, Md., has been appointed as its high temperature cement representative in the State of Maryland. This territory also includes Washington, D. C.

The Ford Motor Company of Dearborn, Mich., has ordered one 600 hp. and one 300 hp. oil electric locomotive from the Ingersoll-Rand Company for the Rouge River plant. These locomotives will be furnished with General Electric Equipment.

New Era in the Manufacture of Paper[1]

By V. S. DENISON

THE Paper & Textile Machinery Company whom I represent has a new paper mill at Sandusky, Ohio, built around a new principle, and that is formation of stock into paper by suction, rather than flown stock on a wire as is done on the conventional fourdrinier, or causing it to adhere to a cylinder mold by a small difference in head in the water. Our machine is built around the principle of positively sucking the fibers on to a rapidly traveling wire and drying them sufficiently by vacuum in the travel of that wire of about 4 ft. equal to the character of a sheet leaving the average fourdrinier wire.

You will appreciate that in sucking the fibers on the wire, the fibers are automatically forced to find the thinnest spot in the formation and the result is a level uniformly formed paper.

Our forming rolls are specially constructed suction rolls over which travels a short fourdrinier wire. The stock from a small head box flows against this wire and formation takes place immediately; another suction compartment in the suction forming mold dries the sheet. In our machine at Sandusky we have a combination of three forming molds; and having a short fourdrinier wire, the sheet from each wire is combined and is automatically transferred by positive suction to the press felt. This combination could be extended to more than three molds, but it is hardly possible that more than three may be required, as a very heavy deposit may be picked up by each forming mold by increasing the degree of vacuum. Our machine is so built that we may run one, two, or three forming molds at a time; that is, we can run single, duplex, or triplex paper. We can also run duplex with either two wire sides out or two felt sides out, insuring both sides being exactly alike, or we can run a triplex sheet, crossing the fibers in each forming mold differently; also a cheap filler can be used in the center or used or colored or high grade liner on each side.

The fourdrinier wires being short they are readily handled. No rolls are removed from the machine in putting on a wire and the whole operation takes less than thirty minutes. The felts are also rapidly handled. As stated above, the sheet from one, two or three of these forming molds is automatically transferred to the felt, going to the press. The press part is unusual and a radical departure also. It looks like a calender stack—ours is four rolls high. The bottom roll is a suction press and so is the second roll. It has an auxiliary suction box whose function is to suck the sheet off the bottom roll and felt. The sheet carries around the second roll, which is also a suction press, the third roll is rubber, and over the rubber roll is a bronze roll. The travel of the paper web is opposite from a calender stack, in that it enters the bottom and comes out at the top. The machine is automatic to this point; that is, whatever stock is put in at the head box cannot be touched by hand until it is pressed and ready for the dryers.

We have a pair of smoothing presses ahead of our dryers also. These are the usual bronze and rubber combination.

Our dryers are unusual in that only two of them have gears; the balance are driven by the dryer felt. We took unusual care in balancing these dryers and they are mounted on ball-bearing trunions; one of these dryers can be moved with a finger touch. This type of dryer bearing is positively anti-friction and it takes care of the expansion and contraction of the dryers unnoticed. Our steam joint piping is so arranged that the dryers are as open on the back side as the front and are just as readily accessible.

A word about speed. We have made duplex newsprint at a speed of 740 feet and dried it on our twenty 48-inch dryers. We have run over 900 feet on standard newsprint, but of course could not properly dry it with our limited number of dryers. You appreciate high-speed news machines have forty to forty-eight 5-ft. dryers to run 1,000 feet. We have made standard 48-lb. roofing felt at 500 feet speed.

While our mill may be classed as an experimental mill,

[1] Read before the joint meeting of superintendents at Washington, D. C., October 18, 1929.

we have a 60-inch machine; it has the usual calender stack, reel and winder. The mill is equipped with three standard beaters, three jordans and three screens, besides the usual stuff chests and consistency regulators. Our mill is equipped throughout with our own make of vacuum pumps and stuff pumps; it is not a toy affair, as all parts, such as rolls, etc., are commercial size. We have expended a sum of about $300,000 on this plant. We propose to demonstrate it to the papermaker on his own stock under his own supervision and have quite a busy season already lined up. We propose to treat all such trial runs in strict confidence and all of you are cordially invited to visit us.

I want to add in closing that Mr. Millspaugh has been working on this invention for many years. I believe it was in 1914 he experimented with a crude unit at one of the International mills, since which time we have had for several years a crude wet end in an old building at Sandusky, Ohio. The success we have met with and the astonishment and favorable comment by the few who have seen it in operation seem to verify completely Mr. Millspaugh's firm conviction in the soundness of his theory regarding paper formation and drying.

New Development in Roof Construction

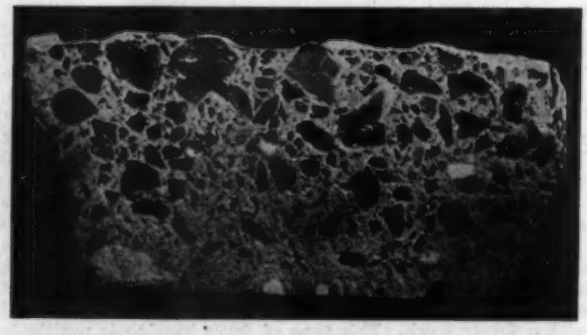
By A. B. SHENK

Engineer, Federal Cement Tile Co., Chicago

TO understand properly the latest advance in the design and construction of roof-decks as used over the modern industrial or public building, it is necessary to consider for a moment, the parallel development of lightweight concrete.

When shale is ground and burned under careful control at a temperature of about 2000° Fahr. in rotary kilns of a type similar to those used in the manufacture of Portland cement, the oxidation of the carbon content forms gases and causes the shale to expand into an inert, lightweight cellular structure. The result is a mass of trapped air cells, the walls of which are thoroughly vitrified, fused shale, impervious and of great structural strength.

This material, known as Haydite, when crushed, screened and graded, is used as an aggregate instead of sand and gravel, or stone, to produce the newer concrete. Two marked advantages result from the presence of the trapped air cells: (1) the concrete becomes very much lighter in weight than ordinary concrete, yet with the same structural strengh,

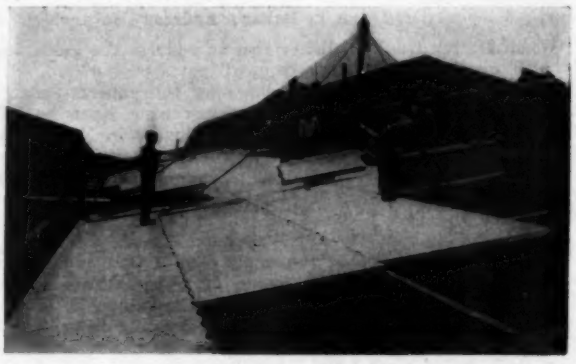


Cross section of lightweight, insulating concrete slightly enlarged, showing the dense impervious structure of the concrete, and the cellular nature of the aggregate

and (2) it possesses a very definite insulating value heretofore unobtainable in concrete.

Roof slabs have been precast of concrete and extensively used for permanent, fireproof, no-maintenance roof-decks for many years on all kinds of buildings. Since they are laid directly on the steel roof purlins to form the roof-deck, their weight is naturally an important factor in determining the amount and cost of the structural steel used to support the roof.

A sand concrete slab of this kind in channel form, say 6 feet long by 2 feet wide, would weigh 15 lbs. per sq. ft. In



Showing how the lightweight, insulating concrete roof slabs are laid on the steel purlins after being hoisted direct from box cars to roof

Haydite concrete however, this same slab weighs but 10 lbs. per sq. ft. or one-third less. It is thus apparent that there is a considerable saving in steel to support a roof-deck of Haydite slabs over one of ordinary sand concrete. In fact, despite the availability of other forms of roof-deck, such as common lumber, steel, etc., it is significant that this newer deck of concrete with all its advantages of permanence, fire-safety and absence of maintenance, usually requires no heavier steel design than any of the other materials.

Furthermore, in addition to the benefits of light weight, there is also the new insulating quality of Haydite concrete, a factor recognized today more than ever before in preventing condensation, and in saving radiation and fuel in the design and operation of the heating plant. This quality is a natural result of the millions of individual trapped air cells in this concrete, which provide an ideal insulation against the passage of heat and cold. Some idea of the practical value of this characteristic may be gained from a comparison of heat conductivity. The co-efficient of thermal conductivity (or scientific measure of this factor) for a slab of sand concrete of usual proportions one inch thick, is 6 British Thermal Units per hour, per square foot, per degree Fahrenheit difference in temperature. The co-efficient for a similar slab of Haydite concrete with a density of 73.00, is 1.62, indicating the superiority of a roof-deck of this latter type as a heat and cold insulator.

For extreme conditions of heat and humidity, it is, of course, possible to place a layer of additional insulating material such as cork, or the like, over a Haydite concrete roof-deck. As a matter of fact, however, there are today thousands of acres of roofs which have given excellent service for years, consisting simply of the sand concrete roof-deck covered with composition covering.

Haydite concrete slabs have been under test in an actual roof for over eight years, and many complete roofs have been in service for two years. In the last few months, however, this product has been put in standard quantity production and given publicity. The response from building interests has been so marked that today, over two million square feet of these slabs have been contracted for to cover buildings for concerns like Oakland Motors, Chicago, Milwaukee & St. Paul Railroad, Inland Steel, International Harvester, Chrysler, Edison Electric, Oliver Farm Equipment—as well as for public buildings such as the new Detroit Airport Hangar, Auditoriums at Flint and Shreveport, Naval and Field Artillery Armories in Chicago, and many more.

The slabs are made under close factory control, laid anywhere in the country, and guaranteed by the Federal Cement Tile Company of Chicago.

The Chain Belt Company, Milwaukee, Wis., has opened a New England district office in Boston at 950 Park Square Building. The Boston office will manage the distribution of the company's entire line of conveying systems, power plant equipment, chains and transmission machinery.

Power Economy on Breaker Beater

Severe Starting Requirements Successfully Met with Synchronous Motor

By HARRY W. MOTTER
Engineer, Electric Machinery Mfg. Company

CONSTANT progress is being made toward simplification and greater economy in paper mill drives. A big user of power, the paper industry has naturally been quick to adopt modern and highly efficient motors. The outstanding economies and advantages of the synchronous motor have led to its rapid application in paper mills in recent years on grinders, jordans, pulp screens, beaters, water, stock and vacuum pumps and other drives. At an eastern paperboard mill, a recently installed synchronous motor driven continuous breaker beater is of unusual interest. It shows the breaker advantages that are obtained by the use of synchronous motors, and illustrates the progress that has been made in the improvement of synchronous motor starting torque—in overcoming one of the former objections to the use of synchronous motor drives. The continuous breaker beater replaces a previous installation of six individual small breakers driven by induction motors, and the substitution of the single continuous breaker beater for the six separate small breakers has, of course, resulted in a considerable economy by the elimination of an attendant labor item.

The usual electric motor drive for this beater would have been a slipring induction motor. However, because of its inherent advantages, the paper company first considered the possibility of applying a synchronous motor to the drive.

Power for the plant is bought from the Metropolitan Edison Company, who have in their power rates a power factor clause. This power factor clause made it important that plant power factor be kept high, because the effect of the power factor clause was to apply a penalty for power factors below 80 per cent and to permit a rebate on the power bill if a higher power factor was maintained. It was important, then that a high power factor motor be used.

To have used a slipring induction motor for this drive, would have given no power factor advantage. In fact, the result would have been to slightly lower the power factor of the plant. Another disadvantage of a slipring induction motor was its lower efficiency as compared with a synchronous motor.

Because of its advantages, a synchronous motor was applied to drive the continuous breaker beater. As is well-known, beater starting requirements are quite severe. However, the motor was designed with a special starting winding to successfully handle the starting torque requirements. The motor (See illustration) is 200 hp., 600 r.p.m., 440 volts, for operation at 80 per cent leading power factor.

The motor is controlled by the most modern method of synchronous motor control, the "Frequency-Relay" system. The starter is of the automatic, reduced-voltage type, the starting auto-transformer of which has 65 per cent, 80 per cent and 90 per cent voltage taps. It is connected for operation on the 80 per cent voltage tap and is equipped with an emergency push button to be used in case the beater becomes clogged, to connect the motor directly across the line, thus applying full voltage to its armature terminals and increasing considerably the starting torque.

The reduced voltage starter was used to keep the inrush to the motor at starting, down to a value which was satisfactory to the power company. The "Frequency-Relay" controlled starter transfers the motor at starting, from reduced to full voltage at the motor speed which causes minimum disturbance to the power system and applies the direct current excitation to the field of the synchronous motor at a predetermined correct motor speed, quite essential to correct starting. Under normal conditions, the motor pulls into step, or synchronizes with the power supply in approximately ten seconds. The starter is operated by either of two push-button stations, one on the starting panel as shown in the illustration; the other at a convenient place on the second floor of the mill, from which place the beater is fed.

The beater is a Shartle continuous breaker beater equipped with a perforated back fall, automatic rag catcher, and junk remover—to handle waste paper. The beater has a capacity of 125 tons per day; a 72-inch by 72-inch roll. The weight of the roll and shaft is 9½ tons and the speed of the beater is 80 r.p.m. The tub is of concrete and was designed by Karl A. Lefren, Inc., of New York City, who engineered the beater layout and installation. An English system cotton rope drive is used, consisting of a fifteen-foot driven sheave weighing five tons, a two-foot driving sheave, and its uses eighteen strands of seven-eighths-inch cotton rope. The distance between centers of sheaves is fifteen feet.

The installation of the synchronous motor driver continuous breaker beater resulted in important economies and advantages. They are listed below:

(1) Six Small breakers were eliminated; therefore, there will be a considerable saving due to the smaller amount of maintenance required for the single beater and the single motor as compared with the previous installation.

(2) Labor item of attendants was reduced.

(3) There will be an appreciable saving each year due to the improvement in the power factor of the plant.

(4) There will be a saving in power bill due to the higher efficiency of the synchronous motor as compared with the combined lower efficiency of the six squirrel-cage induction motors which were formerly used with the small breakers.

(5) The load factor will be improved by use of the continuous beater.

(6) The installation is simplified. Starting of the motor consists of merely pushing a button as compared with the manual starting of the six induction motors formerly used.

Cutler-Hammer, Inc., announces that its St. Louis district sales office has been moved from 611 Olive street to 1914 Washington Ave., where a warehouse has been established for carrying a stock of supplies for immediate delivery.

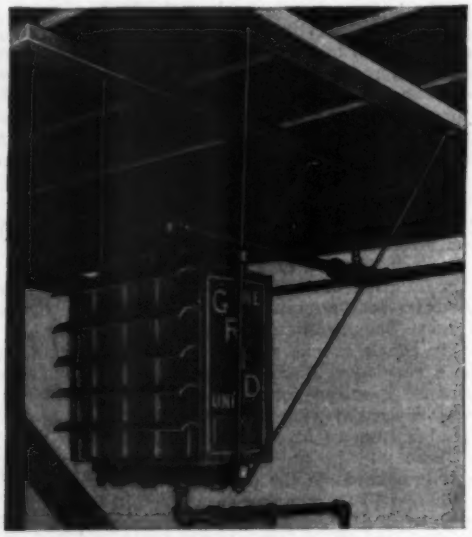
One 200 hp., 600 r.p.m., 440 v., 3 ph., 60 cy., 40 deg., 80 per cent p.f., belted three bearing pedestal type synchronous motor driving a beater through a rope drive at the Schmidt & Ault Paper Co., York, Pa.

A Grid Type Unit Heater

The unit heater has become generally accepted as a most satisfactory means of heating various departments in a pulp and paper mill. Any casual survey of a modern plant will show numerous applications of this type of heater.

A new type unit heater, designated as "The Grit Unit" has recently been placed on the market. This heater is said to offer a new standard for unit heating and cooling.

The heating elements in the grid units are composite castings of close-grained gray iron and aluminum alloy. The



steam chamber is gray iron and is sufficiently heavy in section to withstand the highest pressures ordinarily used on heating systems. The fins are of lightweight aluminum alloy and are cast integral with the iron center. The units are made with a few joints which are made tight with copper gaskets and bronze sleeves. The manifolds are gray iron castings with lugs for attaching supporting rods. Pressed sheet steel is used for the casings or cabinets. The cabinets, arranged to eliminate rattling, are painted after the units are assembled. Louvres are attached to the casings to direct the air leaving the heaters. They are individually adjustable. The motors, positively supported, are of a type designed for long, continuous operation.

The units, as mentioned previously, can also be used for cooling. They are adapted to circulate cold water, or sodium or calcium brine by simply connecting to the refrigerant pipe lines.

This heater, marketed by the Unit Heater & Cooler Co., with main office at Wausau, Wis., and general sales offices in First National Bank Bldg., Chicago and Salmon Tower Bldg., New York City, is a product of the D. J. Murray Manufacturing Company. The Unit Heater & Cooler Company is represented in New England by the Thermal Engineering Company, 45 Bromfield Street, Boston; in Ohio by the Brewster P. Kinney Company, 1375 Euclid Ave., Cleveland, Ohio; in Minnesota by Frank Kiesner, 332 McKnight Bldg., Minneapolis; and in Oregon by J. E. Martin, 443 E. 10th Street, Portland, Oregon. Complete information about the new type heater may be obtained from any of the offices.

American Forestry Ass'n Announces Awards

To encourage children throughout the nation to become interested in forests and to understand more fully what growing forests mean from the standpoint of public welfare and good citizenship, the American Forestry Association announces that it will award annually medals to winners of forestry contests in every state in the union, including Alaska.

These contests will be sponsored by various state organizations, under the direction of the association. Essay or oratorical contests, planting contests, tree care contests and contests in forestry education are among the contests that may be sponsored by the state agencies. In Alaska, Governor Parks is conducting the contests from his office, and the first awards will be made this winter.

The awards will be made yearly in each state—one to the school or club whose pupil or member wins the contest, and the other to the winning pupil or member. The school and club medal, set on a walnut stand, will pass from institution to institution, as won during consecutive years until the contest is won by the same school or club three different times when the medal may be retained as a permanent trophy. The medal awarded the winning child, a smaller reproduction of the larger medal, becomes the permanent property of the winning child when once won.

Each contest is to be confined to an individual state but every contest is to be state-wide. There will be no relation between the contest in one state and the contests in adjoining states. Each contest may be promoted and conducted by State Forest Services, State Forestry Associations, State colleges or schools, or any other organization approved by the American Forestry Association. The contests are to be annual and of a character designed to stimulate children's interest and knowledge in forestry. The public schools, high schools, boy or girl scouts, 4-H clubs and similar juvenile organizations are eligible for the contests.

Westinghouse Salutes Industry by Radio

Inaugurating a good will series of radio programs dedicated to industry, the Westinghouse Electric and Manufacturing Company will endeavor to popularize America's great industries in elaborate programs weekly on a coast-to-coast broadcasting hook-up.

These presentations will go on the air every Wednesday night at 7:30 o'clock eastern standard time, to and including January 1, 1930, and will be known as the Westinghouse Salutes to Industry. They will be broadcast over the Blue Chain of broadcasting stations, with supplementary networks of the National Broadcasting Company heading up through WJZ, New York City.

The Westinghouse Salutes were inaugurated November 6 with a tribute to the Iron and Steel Industry. Other tributes projected at the present time are as follows:

November 13—Aviation Industry
November 20—Paper Industry
November 27—Food Industry
December 4—Textile Industry
December 11—Electrical Christmas
December 18—Pumping and Irrigation
December 25—(Christmas Night) Electricity in the Home
January 1—(New Year's Night) Looking Forward in the Electrical Industry

A fifty-piece symphony orchestra, a choir of 40 voices, a cast of 20 veteran actors and a production staff utilizing the best talent in radio are to be combined by the National Broadcasting Company to produce what are expected to be the most pretentious and elaborate radio presentations ever to go on the air.

The new productions, according to National Broadcasting Company executives, will be the most costly radio presentations ever to be broadcast regularly. They will employ the largest cast of musicians and actors of any regular program. The technique of the productions represents the latest developments in radio showmanship and they are the first productions to include every microphone medium heretofore used in radio, supplemented by the new developments in presentation methods.

Another departure in the productions will be that the customary announcer will be eliminated. Instead listeners will hear the voice of Pedro de Cordoba, one of America's greatest actors. His voice will link together the various parts of the program.

The Claremont Paper Co., Inc., Claremont, N. H., is installing a big mill trimmer in connection with the modernization of the plant to meet present-day conditions.

Jesse H. Neal Named General Manager of American Paper and Pulp Association

Jesse H. Neal, of New York City, has been appointed general manager of the American Paper and Pulp Association, a new office created by resolution of the association at the annual meeting last February, and entered upon his duties, Monday, November 4. In their quest for a man to fill this responsible position especial consideration was given

Jesse H. Neal

General Manager, American Paper & Pulp Association

by the executive committee of the association to previous experience and accomplishments in co-operative association activities, and particularly that type of previous experience which could be applied in the successful development of the association and the development of the industry as a whole. It is generally agreed that Mr. Neal was the best available man for the position.

Among large users of paper, Mr. Neal is widely and favorably known, having been for eleven years executive secretary of The Associated Business Papers, Inc., an institution which he was influential in organizing. During this period he also acted as secretary-treasurer of the Associated Advertising Clubs of the World; was treasurer of the National Better Business Bureau, and secretary of the National Advertising Commission and the Publishers' Advisory Board. The offices named evidently did not keep Mr. Neal busy enough as we find that he was also vice president of the Trade Association Executives and a director of the Advertising Club, as well as of Technical Publicity Association during the same period. In connection with these various activities he represented national publishing interests before committees of congress and government departments and during the World War he served as a director of the federal division of advertising.

Mr. Neal was born in Mankato, Minn., and got his early education and technical training as a newspaper man in St. Paul, which is not a great distance from Mankato. Before leaving St. Paul to come East, he had attained a position of some eminence in the civic affairs of the community, having been elected president of the famous Town Criers' Club which specified advertising under State and municipal auspices. In addition to a varied newspaper experience, he has seen service as sales manager and general manager respectively of two manufacturing concerns and was vice president and manager of an important advertising agency.

In a talk with a representative of THE PAPER INDUSTRY, Mr. Neal expressed himself as being profoundly impressed with the importance of the pulp and paper industry among the nation's industries and is evidently well aware that it is entitled to a greater amount of consideration from legislators and other men of affairs than it has received hitherto. He will devote his entire time, energy and ability to furthering the interests of our industry, and if the future of a man may be predicated from his past, the American Paper and Pulp Association is to be congratulated on its selection of Mr. Neal as general manager, for he has a wealth of organization experience.

If trouble ever arises with the Indians in the pulpwood region of northern Minnesota, Mr. Neal may be expected to exercise a good influence with them, for he is a member of the Ojibiway tribe by adoption.

Calendar Reform Proposals Lack Majority

Proposals for calendar reform failed to receive the necessary two-thirds majority vote in a nation-wide referendum of business organizations included in the membership of the Chamber of Commerce of the United States.

A preliminary canvass of the balloting, made public to-day, shows that each of the three proposals put forward received a majority of the votes cast, but since the National Chamber can be committed only by a two-thirds majority no decision was reached on any of the propositions. The proposals submitted and the vote on each follows:

That the present calendar should be so changed as to bring about a greater comparability in business records for periods within a year and for periods from year to year. For, 1,549; against, 1,318; necessary to carry, 1,912.

That the form which changes in the calendar should take should be determined through international conference. For, 1,783; against, 1,082; necessary to carry, 1,910.

That the government of the United States should participate in an international conference to determine the form of changes to be made in the calendar. For, 1,856; against, 1,009; necessary to carry, 1,911.

As shown by the preliminary count, the suggestion that the United States should participate in an international conference to determine the form of changes to be made in the calendar received the largest affirmative vote, but this was short of the requisite two-thirds. The proposal that the present calendar should be changed failed by the largest margin.

The proposals submitted to referendum were recommendations contained in a report prepared by a special committee of the Chamber. The report was accompanied by a minority finding advocating continuance of the present calendar.

The subject of calendar reform has been agitated for a number of years both here and abroad. The League of Nations, the International Chamber of Commerce and the International Astronomical Union are among the organizations which have given it study.

The report of the Chamber's committee emphasized especially inconveniences in business accounting arising from the fact that months, quarters and half years are of unequal length, quoting at length from a report made to the League of Nations by a special committee.

The committee reporting to the League of Nations went over about 200 plans for changing the calendar and recommended that attention should be centered on three fundamental questions:

1—Should the divisions of the year in the present calendar be so changed that there will be greater uniformity in length and consequently better comparability?

2—Should the weeks be fixed in their relation to the divisions of the year in which they occur?

3—How should the form of the changes be determined?

The Chamber's committee, in proposing calendar reform, itself put forward no specific plan. In its report it said that a difference of opinion exists among students of the calendar as to what particular divisions of the year should be made equal. Plans of one kind undertake to make the year's

quarters of equal length, with the same number of week days in each month. The best known plan of the other type contemplates months of equal length, with the weeks fixed in each month, with the consequence that the number of week days would be the same in all months and a date within the month always would fall upon the same day of the week. Both types of plans provide calendars of 364 days and would utilize a "blank" day to fill out the ordinary year, with two "blank" days for leap year.

Majority members of the Chamber's committee developed individual preferences respecting a twelve month plan and a thirteen month plan, with the thirteen month plan receiving most favor.

The problem attending the wide variance year by year in Easter dates received the attention of the Chamber's committee, which pointed out the inconvenience of the present arrangement.

The committee's minority members frankly opposed any calendar changes. In their separate report they said:

"Generally speaking, the civilized world does now possess, or is rapidly coming to possess, a calendar enjoying substantial uniformity. The infliction of a new calendar having radical departures from the present, or attempting to improve it, would mean annoyance to millions of people, would bring great discomfiture to great sects which view the present calendar with religious loyalty, and would offer nothing of substantial value to any single business which that business cannot enjoy now, if it will.

"The daily use of the calendar vitally concerns the intimate habits and views of vast millions of people in this country. The proposal to agitate a reform in the calendar as presented has no popular backing worth mentioning. It comes to this Chamber with the studied support of but few people. A large group has been circularized and, as often happens with catchy ideas, a great many people, many of them of business prominence, are giving this proposal their endorsement, without deep thinking. We have not learned that these people are giving else but lip service towards the furtherance of the idea, though apparently a considerable sum of money is being spent to launch it.

"However enthusiastic the proponents of the proposed change may seem to be, general business has little interest. Those who wish to use a system of accounting other than that based upon the present months are now doing so. Business, as such, should be careful not to intrude upon matters peculiarly of private concern as well as being interwoven with custom of long standing, unless a change is of transcending importance to business itself. The Chamber of Commerce can well avoid taking any step to commit itself in this matter."

Offer Scholarship in Safety Training

A call for "men with qualities of leadership to equip themselves for executive positions in the safety movement" was issued today jointly by New York University, the American Museum of Safety and the National Society for the Prevention of Blindness. Rufus D. Smith, director of the Extension Division of the University, at the same time announced that ten free scholarships to the University's course in Accident Prevention had been made available by Arthur Williams, president of the Museum of Safety. A scholarship is to be given to the person designated by each of the following organizations: Merchants Association of New York; New York State Chamber of Commerce; Brooklyn Chamber of Commerce; Queens Chamber of Commerce; Bronx Board of Trade; Industrial Education Department of the Y. M. C. A., Manhattan; New York City Continuation Schools; New York City Realty Board; American Federation of Labor, New York City Office; General Contractors Association of America.

Mr. Williams' decision to finance the training of ten men for service in accident prevention was influenced by the fact that—despite the excellent accomplishment of many cities and industries—the toll of accidents has steadily increased. At the National Safety Congress, recently held in Chicago, it was revealed that 97,000 persons were killed by accident in the United States during the last year—the greatest total of such casualties in the history of the country. At the same time the records of the New York State Department of Labor show that during the first seven months of this year in the metropolitan district alone 10,000 more accidents were reported than during the corresponding period of last year. This is characteristic of the situation in industry and in public life throughout the country. It is the belief of close students of this problem that the major cause of the present situation is the lack of leaders in this new profession. New York University has therefore decided this year to make its course for the training of public and industrial safety directors available to any interested man or woman showing qualities of leadership, irrespective of previous academic education.

The course will be given evenings at the Washington Square Branch of the University. The course will be conducted in co-operation with the Museum of Safety and the ten industrial and commercial associations which have been asked to designate scholarship students. The instruction will include: minimum of theory and a maximum of practical data growing out of the experience of the industries and communities that have been most successful in the reduction of accidents. Students of the course will be taken through the plants of members of the Museum of Safety and the various industrial associations where they may observe at first hand the technique of accident prevention.

The instructors in the course are: C. W. Price, consulting safety engineer and former general manager of the National Safety Council, Dr. E. George Payne, Assistant Dean, School of Education, New York University; Louis Resnick, director of Publicity, National Society for the Prevention of Blindness; W. Graham Cole, director of Safety, Metropolitan Insurance Company; C. S. Carstens, safety engineer, Metropolitan Life Insurance Company.

Among the subjects to be covered are:

What the chief executives of a plant can do to promote safety.

What a foreman must do to make his department safe.

Making the plant physically safe.

How the eye hazards of industrial occupations can be eliminated.

The influences of workmen's safety committees and workmen in accident prevention.

The printed word as a factor in accident prevention.

The fundamental principles of organized community safety campaigns.

Safety instruction in the public and parochial schools.

"Safety Week" drives and their effect on permanent accident prevention activities.

How papers, movies, and the radio influence the accident situation.

Accident prevention in the home.

Traffic surveys and law enforcement as means of accident prevention.

Organizing commercial vehicle operators for safety.

A New Chain Hoist

A differential chain hoist possessing three new and exclusive features of superiority is announced by Robbins & Myers, Inc., Springfield, Ohio.

Timken thrust bearings used in the lower hook permit easy turning of the load in addition to reducing chain and upper sheave wheel wear caused by chain twisting. The sheaves are of Aremite, an alloyed iron produced in the Robbins & Myers foundry, which, because of a tensile strength twice that of ordinary gray iron and an unusual hardness, is remarkably durable. Aluminum finish is used throughout, chains excluded, and provides lasting protection against damage from exposure. The chains are of a special analysis steel, heat treated and electrically welded.

This hoist is manufactured in five sizes, with capacities ranging from ¼ to 2 tons. Descriptive bulletins containing complete information are being distributed by the manufacturers.

Celebration in Honor of Riley Mill

Cups Presented at Banquet Tendered by the International Paper Company at Livermore Falls, Maine

THE Riley mill of the International Paper Company, Otis Division, Chisholm, Maine, was in June, this year, declared the winner of the prizes offered by the National Safety Council and THE PAPER INDUSTRY magazine in the 1927 contest to decide on the mill in Group C class, having 20 to 200 employees, which had the best safety record, the lowest accident severity rate, or days lost per 1,000 man-hours worked, during a term of six months from January 1, 1927, to June 30, 1927. The prizes consisted of a silver cup and certificate of the National Safety Council and a large silver cup constituting the grand prize donated by Edward B. Fritz, publisher of THE PAPER INDUSTRY.

Delay in Award

The delay of two years in the award of the prizes was a consequence of the rules established by the National Safety Council governing the 1927 contest which provided that in the event of two or more mills being tied for first place, the contest should be extended for all competing mills until the tie was broken. The contest was prolonged for twenty-nine months, one mill after another dropping out of first place by reason of accident frequency and severity, man-hours worked, physical conditions or other contributory factors, until the Riley mill, Otis division of the International Paper Company, stood at the top alone, the undisputed winner of the National Safety Council cup, as well as the major prize cup of THE PAPER INDUSTRY.

Although every hazard incident to the manufacturer of groundwood pulp is to be found in the Riley mill, it has the enviable distinction of not having a single lost-time accident during a period extending over almost three years.

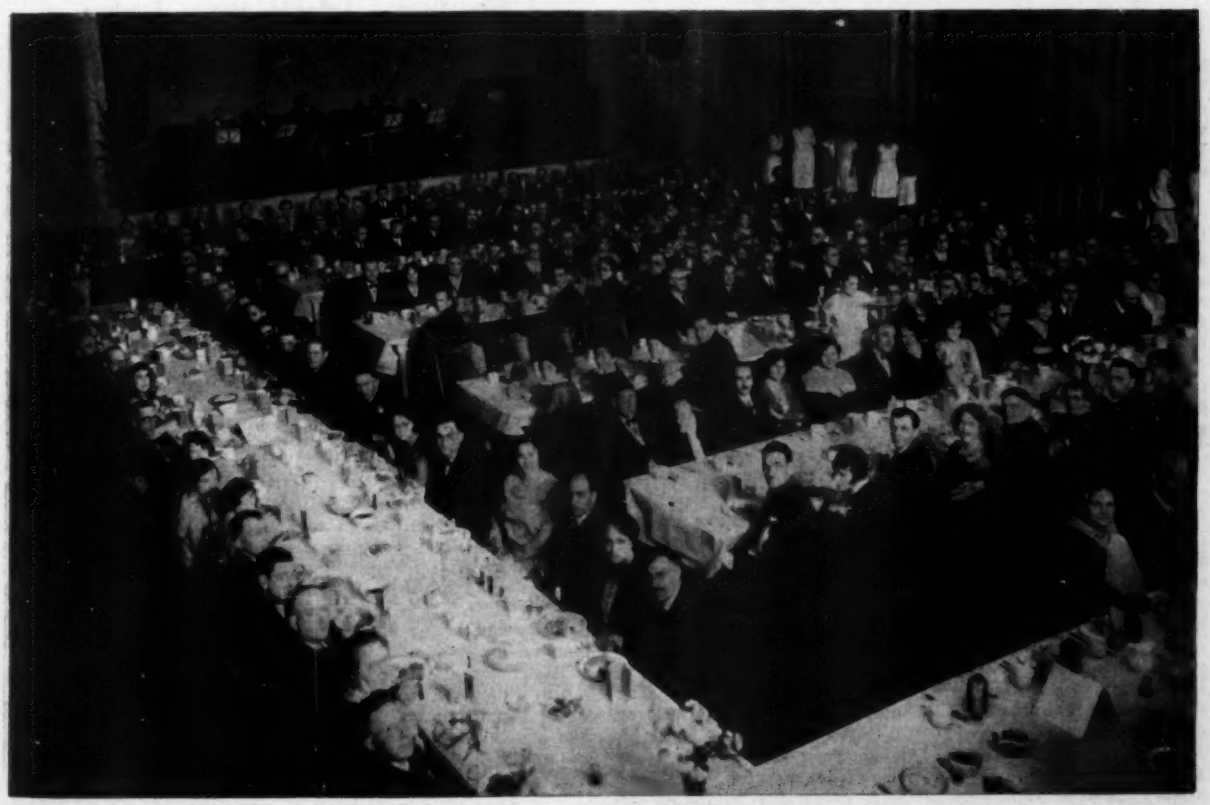
Where the Riley Mill is Situated

Livermore Falls, Maine, which is the railroad center for the three mills of the International Paper Company in the vicinity, is situated in the west central part of the State, on the Androscoggin river, and has a population of 5,000, including Chisholm, a few blocks to the north of the village center, where the large paper mill and sulphite plant of the company, known as the Otis mill, is located, the Livermore pulp mill, supplying groundwood being within sight and hearing of the villagers at the river's edge, and is one of the great industries of the village.

In a northwesterly direction, five miles distant from Livermore Falls, beautifully located among the hills just around a bend of the Androscoggin river, lies the village of Riley which has sprung into fame as the home of the Riley mill of the International Paper Company. For many years, Frank Pakulski as mill superintendent and Everett Strout as division superintendent of groundwood, have supervised production at the Riley mill, Alvin F. Record being division safety supervisor. For a period of a year Thomas G. Mangan has been general manager of the entire Otis division, having succeeded the late William A. Murray, who died about a year ago.

Where the Celebration Took Place

As a monument to the deceased general manager, there



Scene at the banquet tendered by the International Paper Co. at Murray Hall, Livermore Falls, Me., Tuesday, October 22, 1929, in celebration of the winning by the Riley mill, Otis Division, of the major prizes in the National Safety Contest

has been erected in Livermore Falls a large theatre building, sports and amusement center, which is named Murray Hall, and it was here that on Tuesday evening, October 22, a large assemblage of safety men, as well as employees and executives of mills and guests, gathered to celebrate the victory of the Riley mill in winning the grand prizes for safety work offered by the National Safety Council and THE PAPER INDUSTRY.

An elaborate program had been prepared to celebrate the awards of safety trophies. A banquet was served that would have done credit to any big convention hotel such as mill superintendents and technical men are now accustomed to. But it was a community affair in which the villagers appeared to take special pride. Thus the Ladies Aid Society of the local Baptist Church prepared the different courses served and a number of the ladies waited on the tables. The repast it is needless to say was thoroughly enjoyed by an appreciative gathering. Covers were laid for 250, one long L-shaped table extending down one side of Murray Hall being reserved for the men of Riley mill, at the head of which, to receive the trophies, sat Frank Pakulski, their proud superintendent.

Hall Attractively Decorated

The color scheme of the banquet was green and the appearance of spruce branches and young spruce trees arranged along the lower walls of the hall imparted a Christmasy aspect to the scene. A touch of color was added by the use of vari-colored balloons on the trees and of autumn leaves on the tables. At the guests' or speakers' table, large place cards, consisting of pen and ink sketches and cartoons, which displayed considerable originality and skill, were set in small blocks of wood covered with green crepe paper. These were the work of W. E. P. Fullam, of the Safety Department, Otis mill. The menu cards, printed in black on green paper, listed the courses and gave the names of the speakers and their subjects.

During the banquet music was furnished by an orchestra which also played for the dancing which followed.

A Silent Tribute

Word had been received shortly before the banquet of President Graustein's mother's death and when the guests were seated Toastmaster Mangan asked all to stand and remain silent for a minute as a tribute to her memory as well as to that of their former well-beloved mill manager, William A. Murray. The courses were then served and at the close, the award of trophies was made.

Thomas G. Mangan, general manager, acted as master of ceremonies and toastmaster and distinguished himself in these capacities, his introductions of speakers being well phrased, felicitous and highly complimentary to all. He was unstinted in his commendation of the work of his predecessor in charge of the division and gave generous credit as well to the men and executives of the Otis division who had aided in establishing the high standard of safety practice maintained at the mills of the International Paper Company. He made specific mention of his indebtedness in this respect to John Lundrigan, industrial superintendent, and Alvin F. Record, safety supervisor.

The Safety Contest Reviewed

In a review of the National Safety Contest which resulted in a victory for the Riley mill, Mr. Mangan said it started in January, 1927, with 119 paper and pulp mills entered for the prize. This contest was to run for six months; at the end of that time, six mills in Group C were tied for first prize. According to the rules, the contest was continued until all mills in Group C were eliminated but one. The contest ended June, 1929, leaving the Riley mill sole survivor, with an unbroken record of not having an accident in this mill in the two years, thus making it champion. The fine achievement of the Riley mill was not due to luck or curtailed production, said he, for the mill had been working full time, and production had shown an increase rather than a decrease for the period. The men at Riley had simply made a conscientious effort every day to follow out the safety code of the company and had proved that hazardous labor could be done without accidents.

Mr. Mangan told how "THE PAPER INDUSTRY, a magazine of the trade, has always sponsored safety work in conjunction with the National Safety Council and has offered, since 1917, a cup to the mill in the United States or Canada which went longest without a lost-time accident." He called upon Thomas J. Keenan, associate editor, New York, to make the first presentation of prizes, that of THE PAPER INDUSTRY.

Presenting "The Paper Industry" Cup

The tall silver cup appropriately inscribed stood out prominently on the head table in front of Mr. Keenan, who, in presenting it, expressed to the men of the Riley men the sincere and hearty congratulations of all connected with THE PAPER INDUSTRY and especially those of E. B. Fritz, publisher. He complimented the management of the Otis division of the International Paper Company upon the great achievement of the Riley mill in carrying off the two first prizes before all competitors.

He said that the achievement was one in which every man connected with the Riley mill could take justifiable pride, as it gave the mill the distinction of holding the premier position among the mills of its class in the United States. He also paid his respects to his big audience of mill men present which, he said, reflected a rare spirit of solidarity and helpful co-operation that went far to explain their success in safety work. After acknowledging the uniform courtesy and kindness which he had received from executives and superintendents in his visits to mills, Mr. Keenan made formal presentation of THE PAPER INDUSTRY trophy.

Mr. Record Presents the National Trophy

Alvin F. Record was then called upon to present the prize of a silver cup awarded by the National Safety Council, which he did after an interesting recital of the events leading up to the capture of the prize, in the course of which he gave special credit to Everett Strout and "Jimmie" Gallagher as key men in efficient safety practices at the Riley mill.

Superintendent Pakulski Accepts Trophies

Acceptance of the trophies was made by Frank Pakulski, superintendent of Riley mill, who was asked by Mr. Mangan to do so on behalf of the men.

Mr. Pakulski gave a simple, straightforward account of the means employed by the mill force to maintain a good efficiency record and expressed the pride of his mill in their achievement. The sum and substance of it all as set forth by him in simple, unaffected language was that "Mr. Murray (meaning the late manager of the Otis division) told us to do what was right, and we did it." In the beginning a committee of three had been appointed, Arthur Legere, Andrew Richards and Stephen Strout, but the employees soon entered into the plan, so that each really became a committee of one to watch out for accident prevention.

A Gift of Flowers

A slight, but pleasing departure from the set program was made immediately following Mr. Pakulski's speech of acceptance. Seated at the head table in the center next to Mr. Mangan was a stately, rosy-cheeked, white-haired lady looking the picture of health. This was Mrs. P. I. Ostrander, in charge of all the nurses of the International mills. At a signal from Mr. Mangan, Miss Eva Pomerleau, community nurse of the Otis division of the International Paper Company, approached bearing a huge bouquet of chrysanthemums and other autumn flowers which she handed to Mrs. Ostrander asking her to accept it as a gift from the employees of the Livermore pulp mill, the money to purchase the bouquet having been subscribed in small amounts by the men under Michael Conners, foreman.

Taken completely by surprise, Mrs. Ostrander could only murmur her thanks, but Mr. Mangan insisted on a speech. After some demurring, in which she told that Mr. Mangan had asked her to give a talk and when she refused had said he would make her speak, she did make a pretty acknowledgment and received a round of cheers.

Industrial Superintendent Lundrigan Speaks

John Lundrigan, industrial superintendent of the Inter-

national Paper Company, gave an interesting account of the operation of safety methods in the mills under his jurisdiction. For the remarkable showing made by the men of the Riley mill he had nothing but praise. Another speaker had commented on the ideal relations that existed between the men and the management. These relations appeared to be more intimate and friendly in the Otis division than anywhere else. In regard to this, Mr. Lundrigan said that at its truest and best what was witnessed by the observers in Livermore Falls, Chrisholm and Riley was but a cross-section of a human laboratory to be found in every part of the country where an I. P. mill was operated.

Congratulations from St. Croix

Mr. Mangan read a telegram of congratulation from L. J. Parant, general manager of the St. Croix Paper Company, Woodland, Me., winners of the grand prize in the 1928 safety contest.

A Visitor from Newfoundland

An entertainer then performed on the stage, giving character impersonations, songs and stories, after which Mr. Mangan got the attention of the audience and said there was a guest present who had traveled 1,000 miles to take part in the celebration. He called upon R. L. Weldon, manager of the Newfoundland mill of the Canadian International Paper Company at Corner Brook, to say a few words.

As one of the far-flung family of the I. P. Co., Mr. Weldon said he was both pleased and proud to join in honoring the men of the Riley mill on the conspicuous part they had played in the National Safety Council Contest. He had been greatly impressed by all he had heard and would take back with him to Newfoundland some useful lessons in safety measures to put in practice there. In closing, he gave to all the greetings of the Corner Brook mill.

Additional Honors

Following Mr. Weldon's remarks, Mr. Mangan read a certificate from the National Safety Council giving the Riley mill the additional honor of having no accidents from January 1, 1929, to June 30, 1929, and a second certificate honoring the Otis mill as they had only three accidents, with a loss of 304 hours during the same period of time.

Vice President Charlton Makes an Address

Mr. Mangan then announced that the Otis division was honored by the presence at the Riley mill celebration of vice president A. E. Charlton, manager of manufacturing of the International Paper Company, who was asked to address the gathering.

Mr. Charlton began by saying, "Fellow-workmen of the International Paper Company, I am proud of the record of the Riley mill." He then went on to speak of the plans that had been formed for the further development of the Otis division, plans that called for extensions and improvements extending over a future period of thirty years. He said he was satisfied with the showing that Mr. Mangan had made as manager of the division and if it was desired by him to have an annual affair of the kind they were then enjoying, he could have it. This was in reply to a suggestion put forward earlier in the evening by Mr. Mangan.

Mr. Charlton said he hoped the Riley mill would win first prize again in the safety contest but he should like to see the other mills of the division give them a good tussle for the honor.

At the conclusion of Mr. Charlton's address, the hall was cleared for dancing which was kept up till midnight. The grand march was led by Mrs. Thomas G. Mangan and E. A. Charlton, Mrs. P. I. Ostrander, supervising nurse, of New York, and Thomas G. Mangan.

With the Compliments of the Company

The banquet and program of entertainment were tendered to the employees of the Riley mill (Otis division) by the International Paper Company and all arrangements were carried out under Manager Mangan by the safety department of the Otis mill, with Alvin F. Record, safety supervisor and W. E. P. Fullam, of the safety department in charge, assisted by a large number of employees of the mill.

New Catalogues, Books and Publications

American Society of Mechanical Engineers, New York City—The 1929-30 edition of this company's catalogue is just received and is now being put out under the name of "Mechanical Catalog." This volume shows a gain over the previous issue, having a net total of 745 pages of catalogue data carried by 571 firms. There are over 5,000 illustrations in the volume, and over 42,000 separate listings.

Brown Instrument Co., Philadelphia, Pa.—"Why You Should Use Flow Meters" is the subject of a booklet just put out by this company. The text in this booklet sets forth figures and arguments for reducing steam costs by the use of flow meters. The facts are stated in simple language which is easily understood by the non-technical executive, and is written in such a way as to convey to the management an adequate picture of what steam means to production, or what steam costs may mean to profits.

Byron Jackson Pump Co., Berkeley, Calif.—The latest bulletin on Type "S" double suction, single stage horizontally split case centrifugal pumps has just been issued. There is a brief outline of this company's experience in developing centrifugal pumps; complete specifications of the Type "S" are also outlined and a number of illustrations and sectional views show all parts of the pump. There are numerous illustrations of installations in different industries.

Cameron Machine Co., Brooklyn, N. Y.—An interesting booklet which is all in pictures, shows 48 installations of Camachines in various paper mills. Brief specifications of Camachines for roll production in paper mills, board mills, converting plants and plants manufacturing paper products are given.

Cutler-Hammer, Inc., Milwaukee, Wis.—"Keeping Paper on the Reel" is the title of the new book issued by this company, describing the C-H (Harland) sectional paper machine drive. The book contains many photographs showing installations of this electric drive on various types of papermaking machines. Especially noteworthy are two time exposures which show the "draw" between sections of newsprint machines while both machines ran at high speed. In addition, the book thoroughly explains the detail construction and the operating principle of the C-H sectional drive in non-technical language.

Considerable care has apparently gone into the making of this new book and it should prove a valuable addition to every paper mill's library. A copy will be sent upon request.

General Electric Co., Schenectady, N. Y.—A number of new publications have just been issued by this company. "Electric Heat in Industry" illustrates the application of electric heat to groups of basic operations commonly found in industrial plants. "Electric Furnaces" illustrates and describes the different types of G-E electric furnaces. A folder announces that sheets, tubes, rods in standard or special forms, cut to size, machined or punched, are now available in Textolite Laminated, which is a product composed of paper or cloth treated with synthetic resin and cured and compressed in powerful presses.

Harbison Walker Refractories Co., Pittsburgh, Pa.—A new booklet entitled "Firebond" sets up the advantage of using this company's high temperature cement and contains some new and useful tables for calculating the quantities of brick required for arches of different spans and thicknesses. These tables will be of genuine interest to men concerned with firebrick construction.

Hercules Powder Co., Wilmington, Dela.—A brochure entitled "The Labors of a Modern Hercules" consists of a series of articles by chemists, engineers and officers of the Hercules company descriptive of Hercules processes and products and the ways in which industry is served by them. The part which the research laboratories take in the development of new products and processes forms an interesting chapter. Copies upon request.

Lewellen Manufacturing Co., Columbus, Ind.—A late catalogue, No. 25, presents in detail the latest development by this company in variable speed transmissions and speed controlling devices. Every detail of construction is explained and illustrated, and the advantages of the equipment set forth in an interesting manner. Engineers will be interested in the several pages of diagrammatic dimension tables. Of special interest to paper mills is a short illustrated description of both the Harvey-Lewellen Automatic Paper Thickness Control System for Paper Mills and the Lewellen-Jordan Control for Paper Mills. Complete information on these systems will be furnished, and a copy of the catalogue sent upon request.

Mine Safety Appliances Co., Pittsburgh, Pa.—The entire line of this company, which is one of the largest manufacturers of safety equipment in the world, is listed in a late catalogue entitled "Everything for Mine and Industrial Safety." This catalogue contains an unusually large number of illustrations, many of them in colors. Even where there is no organized safety program, every industrial plant will need one of these catalogues for securing first-aid equipment. A copy should be in the hands of every safety supervisor and may be had upon request.

Swenson Evaporator Co., Harvey, Ill.—Article VII of the series on "Heat Transfer and Crystallization" by Prof. W. L. Badger, deals with principles of forced circulation evaporation. Copies on request.

Technical Economist Corp., New York City—The New "Pahrson" Rotary Dryer is described and illustrated in Bulletin 303. This dryer is recommended for drying wood chips in the manufacture of paper and cellulose pulp.

Presentation of Group C Plaque

Marinette & Menominee Paper Company Celebrates Safety Victory of Menominee Mill

MAKING the best safety record in its group which included fifty-eight mills, thereby winning the group prize in THE PAPER INDUSTRY 1929 Contest, was an achievement which the Menominee, Mich. mill of the Marinette & Menominee Paper Company, Marinette, Wis., felt should be fittingly honored. This mill made an outstanding record in Group C by showing a no-accident record during the period January 1 to June 30, 1929, with 153 employees. There were five mills in Group C having perfect scores, but by reason of its having the greatest number of hours worked, the honors fell to the Menominee mill.

The benefit association of the Menominee mill recently gave a dancing party at which about 150 couples were present. The feature of the evening was the presentation of the National Safety Council plaque, won by the Menominee mill in THE PAPER INDUSTRY 1929 Safety Contest.

The plaque was formally presented to Ben Ferris, president of the Menominee mill benefit association by W. W. Hinnenthal, general manager of the M. & M. Paper Co. Mr. Hinnenthal spoke of the importance of safety work and how it not only depended on the importance of safety work and how it not only depended on the attitude and policy of the company but stressed the fact that it was necessary for every employee to co-operate if safe conditions were to be assured. After Mr. Hinnenthal's talk he handed the award to Mr. Ferris who responded briefly expressing gratitude and the great pride with which they received the distinction.

Then Mr. Hinnenthal introduced P. J. Sievert, general superintendent, who expressed the appreciation of the company for the safe mindedness of the employees. He also brought out not only the appreciation of the company but showed how much more pleasant it was from the standpoint of the employee's home and community in knowing that the men would return to their home after a safe day's work, in such a condition that they could enjoy the pleasures of the home and community unhampered.

Mr. Hinnenthal next introduced A. G. Stone, general manager of the Continental Paper & Bag Mills at Rumford, Me., formerly superintendent of the Menominee mill. Mr. Stone spoke of the seven and a half most pleasant years of his life, which were during the time he was located here. He further mentioned that it was with pride that he could go back to Rumford knowing that he was superintendent of a mill for seven and a half years which had won first place among paper mills of its group in the U. S. and Canada. In concluding Mr. Hinnenthal spoke of the fact that the Menominee mill of the M. & M. Paper Co. was the first mill in the state of Michigan to win the high honor of being a national champion in paper mill safety work.

Second Universal Safety Series

The second Universal Safety Series is now being presented by the National Broadcasting Company in co-operation with the National Safety Council. These programs go on the air every Tuesday evening at 7:15 p. m., eastern standard time, over station WEAF, New York. Every other week a safety talk will be given by a well-known speaker. The alternating week a radio playlet will be staged by National Broadcasting Players. The series was opened October 22, when Jane Addams, world-famous social worker and author, and for many years a leader in the international movement for world peace, spoke to American mothers on "Safety in the Home."

This new series will continue for thirteen consecutive weeks, as a follow-up of the First Universal Safety Series, which began on April 20 of this year with a radio talk by Charles M. Schwab, and which included many outstanding leaders in American life.

C. E. Pettibone Heads N. S. C.

C. Eugene Pettibone, president-elect of the National Safety Council, is vice president and manager of the engineering department of the American Mutual Liability Insurance Company, Boston, Mass. He has been actively connected with safety work for the past 19 years, and as a member of the Association of Iron and Steel Electrical Engineers he participated in the First Annual Safety Congress at Milwaukee in 1912.

Mr. Pettibone was born in Syracuse, N. Y., January 19, 1884. He is a graduate of the University of Toledo and the Case School of Applied Science in Cleveland, receiving the degree of Bachelor of Science in Civil Engineering from the latter institution in 1908. Upon graduation Mr. Pettibone did designing and construction work for the Wheeling & Lake Erie Railroad and the Lake Shore Railroad, and served for a time in the Bridge Engineering Department of Lorraine County, Ohio.

In 1910 he become associated with the American Steel & Wire Company as district safety inspector of the Cleveland district wire mills. In 1911 he entered the service of Pickands, Mather & Co. to organize and direct the company's safety and welfare activities.

On July 1, 1920, Mr. Pettibone became manager of the engineering department of the American Mutual Liability Insurance Company and a year later he was appointed vice president.

Tenth Anniversary National Safety News

The November issue of the National Safety News completes its tenth year of publication. In the year 1919 this safety medium made its advent as a four-page sheet under the direction of Louis Resnick, its founder and first editor.

As the official organ of the National Safety Council, this magazine has grown with the safety movement into a premier publication, carying the inspiration of safety work into practically every industry.

The Safe Practices Pamphlets which are issued regularly by the National Safety Council contain valuable information that should be in the hands of every safety supervisor. Among those recently received carrying information pertinent to the safety work in paper mills are: No. 42, "Industrial Safety Organization"; No. 25, "Acids and Caustics"; No. 93, "Topics for Safety Meetings" and No. P. P.-2 "Safety in Paper Box Manufacturing."

The 1930 Safety Calendar

The 1930 Safety Calendar has already been ordered by many of the mills for distribution to their workers. The paintings on the front pages of this calendar surpass their predecessors from an artistic viewpoint, and the new idea used on the reverse pages has been hailed as making this the most effective safety manual ever embodied in the safety calendar.

On orders for 200 or more, the calendars will be imprinted without extra charge. Less than 200, five dollars for the lot will be charged for imprinting. Prices on any quantity packed flat in tubes will be furnished upon application to the National Safety Council.

R. A. McInnis, general manager of Anglo-Canadian Pulp and Paper Mills and chairman of the Technical Section of the Canadian Pulp and Paper Association, left Montreal for New York on October 15th, whence he sailed for Europe on a combined business and pleasure trip.

The Month at Washington

CONGRESS Busy—The Senate is battling with the tariff conscientiously and a bitter struggle is ensuing between the ranks of Republicans, Democrats and Insurgents, but Senator Smoot of the Finance Committee is leaving no stone unturned to bring to light all possible evidence that might be helpful in reshaping the tariff act. A more recent contribution available to parties interested in studying the tariff is Senate Document No. 30, 71st Congress, 1st Session, being a comparison of rates of duty in the pending tariff bill of 1929, with the tariff act of 1913 and of 1922, being a compilation by the U. S. Tariff Commission showing the comparative rates of duty and equivalent ad valorem rates of the existing law and that of 1913 as compared with the tariff bill now in Congress (H.R. 2667), showing the House Bill as passed by the House and the adjustments as made by the Senate Finance Committee, based also upon imports for local consumption during the calendar year 1928, a compendium of 127 pages.

Another publication is Senate Document No. 31, "Tariff Preference in Great Britain and British Possessions," together with agitation for increased preferential tariff rates in the British commonwealth, prepared under the direction of The Library of Congress, completely indexed.

Another equally important publication is Senate Document No. 32, "Ad Valorem Tariff Rates in Certain European Countries and the United States," covering England, France, Germany and comparative rates, also compiled by the U. S. Tariff Commission.

Another Document No. 33, covers Tariff Increases in Various Countries from 1922 to 1928 inclusive, after passage of the Tariff Act of 1922 in the United States, compiled by the Library of Congress.

After spending six weeks on the special and administrative provisions of the new law, the Senate began consideration of the fifteen different rate schedules and the free list. The first attack was levelled against casein, a production of skimmed milk employed largely in coating paper. The tariff bill as reported to the Senate out of the committee carried a duty of 3½¢ a pound on casein, as against the existing rate fixed in the present law, of 2½¢, which was retained by the House in passing the bill. The Senate by a vote of 52 to 19 put on a rate of 5½¢ per pound, after debating the advisability of levying a duty of 8¢ per pound. This is expected to increase the cost of coated paper only $3 a ton. Senator Vandenberg claimed in the debate that the coated paper industry as a competitive proposition was literally in a death struggle with supercalendered paper. "Market prices have been lowered, and the price of casein has been increasing," he said, "creating the squeeze in which the coated paper industry finds itself." He said that to raise the duty on casein would not help out the farmer if it ruined the coated paper industry and took away from the farmer this market for casein. "Those who advocate the high duty on casein are meditating the farmer's suicide so far as the coated paper market for casein is concerned," he said. Incidentally, the Bureau of Foreign and Domestic Commerce recently released some figures on casein production in the United States during the first quarter of 1929, amounting to 4,696,000 pounds.

With a deadlock developing in the Senate, tariff troubles were taken to the President by interested senators. The Senate has had the tariff bill since June, with 15 schedules to work out and Schedule 1 not completed up to the time the deadlock developed, and we went to press.

New Legislation—Congressman Britten introduced a bill (H. J. Res. 125), concerning the use of the metric system of weights and measures which is coming up again at this first session of the 71st Congress to be ironed out. Since the metric system is accepted generally for international trade purposes and the use of such a system is required by a large majority of the nations of the world, it is again sought to introduce this system in this country.

Congressman Britten also introduced another bill (H. J. Res. 124) relating to the establishment of commodity quantity units for general use in merchandising after 1935, standardizing the yard to the meter, the quart to the liter, the pound to five hundred grams decimally divided.

Senator Brookhart introduced a bill (S. 1944) to create an Industrial Arts Commission, consisting of five commissioners appointed by the President, for the purpose of inquiring into the progress of the different arts and businesses conducted in connection with the same, with its principal office in Washington.

Senator Frazier introduced a bill (S. J. Res. 75) relating to the ownership of stocks and bonds of industrial and other corporations by members of the Senate and House and by employees of Federal Government departments, requiring such holders of stocks and bonds to file with the Federal Trade Commission, a sworn statement of their holdings.

To Regulate Air Commerce—Two bills have been introduced in the Senate to regulate interstate and foreign air commerce (S. 1880 and S. 1864), by air carriers operating as common carriers of persons and of property. The enforcement of the act shall be under the jurisdiction of the Interstate Commerce Commission.

Interstate Commerce Rulings—By a recent order the Interstate Commerce Commission (I & S Docket No. 3356), suspended from Oct. 1st until May 1st next, the operation of certain rates on paper products in the south. The suspended schedules propose to increase the existing carload rating on empty fiberboard, paper, pulpboard or strawboard cans or bottles, from third to second class, in southern classification territory.

Proposed cancellation of less-than-carload commodity rates and of the application of certain fifth-class rates on cores, paper winding, in less than carloads, from certain points in New York and New England to points in New England were found not justified in a decision just rendered by the Commission (I & S Docket No. 3227), and the suspended schedules were ordered cancelled and the proceeding was discontinued.

In Bedford Pulp & Paper Co. vs. Chesapeake & Ohio Rwy., No. 20317, the Commission ruled that the rate on pulpboard, in carloads, from Big Island, Va., to Atlanta, Ga., were unreasonable and unduly prejudicial, and reasonable and nonprejudicial rates were prescribed.

Rates on wrapping paper, in carloads, from Holyoke, Mass., and Rumford, Me., to Bushwick Station, Long Island, were found not unreasonable in another decision and the complaint was dismissed (Equitable Paper Bag Co. No. 20355).

In Pittston Paper Corp. vs. Lehigh Valley R. R. No. 21130, the rates on wood pulp, in carloads, from New York Harbor to Forest Castle, Pa., were found unreasonable and a reasonable rate was prescribed for the future, with reparation awarded.

Wholesale Prices—Continued recession of wholesale prices is shown for September by information collected in leading markets by the Bureau of Labor Statistics and with 1926 as the average basis of 100, we find the following changes:

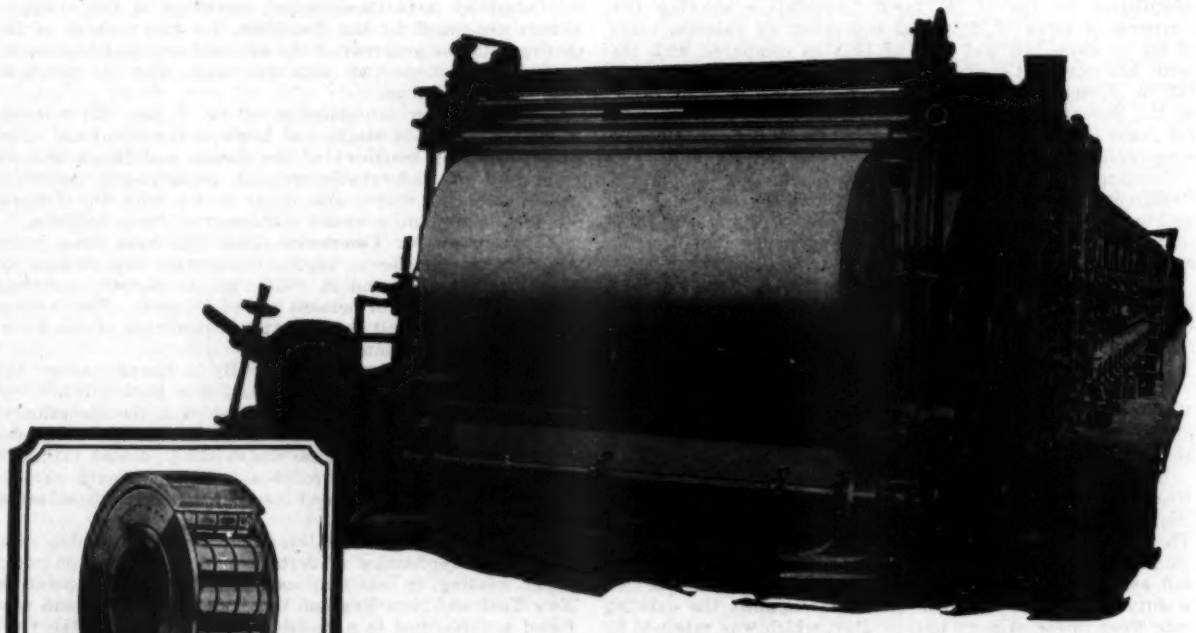
	Sept. 1928	Aug. 1929	Sept. 1929	Purchasing power of the dollar, Sept., 1929
Paper and pulp.....	88.8	88.2	88.2	113.4

Manufacturing Census—Information on trends of industrial migration, data showing the amount of idle power equipment in manufacturing plants, shifting trends in in-

Long Life for Langstons —with HYATTS

If longer life for the equipment where they are applied were their only advantage, Hyatt Roller Bearings would still be a worthwhile investment. But in addition to extending productive life, Hyatts save power, reduce maintenance and assure freedom from tie-ups caused by bearing failures.

In Langston winders, slitters and printer slotters Hyatt Roller Bearings are used to effect smoother running and help insure the sheer, clean cuts for which Langston equipment is noted.



The type C A Langston winder illustrated uses 15 Hyatt Roller Bearings. The Samuel M. Langston Company, Camden, N. J., likewise use Hyatts on their slitters and slotters.

And just as Hyatts are employed in this application you will find them extensively used on many other kinds of pulp and paper machinery.

On your next order for equipment specify "Hyatt Protection" or, if you are interested in Hyatt changeovers to existing equipment, please write us for details.

HYATT ROLLER BEARING COMPANY

Newark Detroit Chicago Pittsburgh Oakland

HYATT

ROLLER BEARINGS

PRODUCT OF GENERAL MOTORS

dustry, and speedier statistics on manufacturing operations is what the 1930 census will bring forth for the first time. Information will also be provided on the practice of manufacturers with respect to the number of days that constitute the normal working week of their plants, whether on a six day, five day or 5½ day basis. Heretofore, exact facts of a nation-wide scope have not been available. The exact employment of women in industry will also become the subject of study, showing comparison with men in each industry, wages, etc. The number of shifts per day will also be shown and number of hours of labor per day.

Employment and Pay Rolls—Employment in manufacturing industries was reported at its highest level since 1927 in September as compared with August, reaching the high level in September over any other month since March, 1927, although the increase in pay rolls was somewhat lessened by the intervention of Labor Day. Employment increased 0.8 per cent in September as compared with August while pay rolls increased 1.2 per cent, according to the report issued by the Department of Labor, and with 1926 as the monthly average basis of 100, we find the following changes:

	Employment			Pay roll totals		
	Sept.	Aug.	Sept.	Sept.	Aug.	Sept.
Paper and pulp	94.7	96.0	96.2	93.9	98.7	98.5
Paper boxes	94.5	95.1	99.0	100.8	100.7	108.0

Average Labor Turnover—The Bureau of Labor Statistics has just released some rather interesting data on the average labor turnover rate in selected factories, showing a much higher rate for 1929 than in 1928. While the quit rate is higher, the lay-off rate and discharge rate is lower, which is interpreted as indicating that factories are running more steadily and that business is more stable than last year.

Simplified Practice—Mimeographed schedules of the various simplified practice programs now in effect are available upon request to the division of simplified practice of the Bureau of Standards. These schedules are for the purpose of acquainting American business men with simplified practice recommendations and contain the recommended list of sizes and varieties only as adopted by the industry concerned.

Industry's evaluation of some of the results obtained by adherence to simplified practice shows that 10 out of 105 active simplified practice recommendations are producing for all interests an annual saving of $300,000,000. Each of the remaining 95 programs in the list is making its annual contribution to reducing the nation's waste cost. Close adherence on the part of industry is shown by the survey made by the department.

Recent Postal News of Interest—A three-day conference was held by the post-office department on Nov. 11-13 with mail users for the purpose of considering changes in postal regulations and the postal laws, so that wherever business interests felt that changes were desirable they might be heard and discuss their views with officials. First-class mail, business reply cards and envelopes, were first discussed; nonmetered first-class matter, third-class mail, methods of handling, fourth-class mail, etc. Walter F. Brown, Postmaster General, stressed the need for new postal legislation in order to place the postal service on a more businesslike basis and urged a new postage rate structure. A new cost accounting system has been developed and the postmaster general is anxious to devise some new method for raising postal revenues which records now show are exceeded by expenditures. The annual cost of maintaining the U. S. postal service, "the largest business in the world" is almost $800,000,000 or 111 times the amount paid for all Alaska, or 50 times the amount Jefferson paid for Louisiana, and will soon become a billion dollar industry. Higher postage for air mail is also advocated to avoid deficits.

Eight Hour Laws—California now leads all states in the application of the 8-hour law for women industrial workers, according to a report of a survey just issued by the Women's Bureau. Although in nine other states 8-hour laws are in effect, the number of industries varies greatly in their application of the law and none can match California.

Manufacturing Data by Counties and Cities—The Census Bureau has released summaries by states of the findings in connection with the 1927 Census of Manufacturers, which gives for each county the number of establishments, average number of wage earners, amount of wages paid, cost of materials and value of products. In addition similar data is released for cities in each state having a population of 10,000 or more, which furnishes an adequate basis for determining the industrial trend in such communities.

Paper Notes of Interest—New paper laboratory developments in the Bureau of Standards cover the moisture content of felt rags, deterioration of paper, dirt count of rag half-stuff, and the adhesiveness of postage stamps to envelopes, copies of which reports may be had on request.

Paper used by public utilities firms is nearing the standardization stage, six grades of bond, four of ledger and three of index Bristol being found to answer most of the requirements. The standardization covers all papers, printed and blank, record and printing paper, used by public utilities.

A golf course is being planned by a Finland paper company (Kymmene Company), one of the principal paper mills in Finland, the course to be completed in the Spring of 1930.

Federal Trade Doings—The Federal Trade Commission has released a pamphlet containing the rules adopted at trade practice conference in 56 industries, covering among other things the paperboard industry.

Field work has been completed on the Commission's investigation of the newsprint paper industry and a report of its findings will be ready in December, covering data on the question of whether practices of manufacturers and distributors of newsprint paper tend to create a monopoly in the supplying of newsprint paper to publishers of small daily and weekly newspapers or constitute a violation of the antitrust laws, pursuant to Senate Resolution No. 337.

An import court ruling has just been handed down by the U. S. Circuit Court of Appeals (3d Cir.), holding that a company which places an imitation product on the market, bearing a false name, cannot escape legal responsibility by disclaiming any intention to deceive or by showing that those with whom it dealt directly knew that it was only an imitation or substitute of the general article.

Following a formal request from the paperboard industry the Federal Trade Commission has changed the status of a rule in secret rebates adopted at a trade practice conference of the industry.

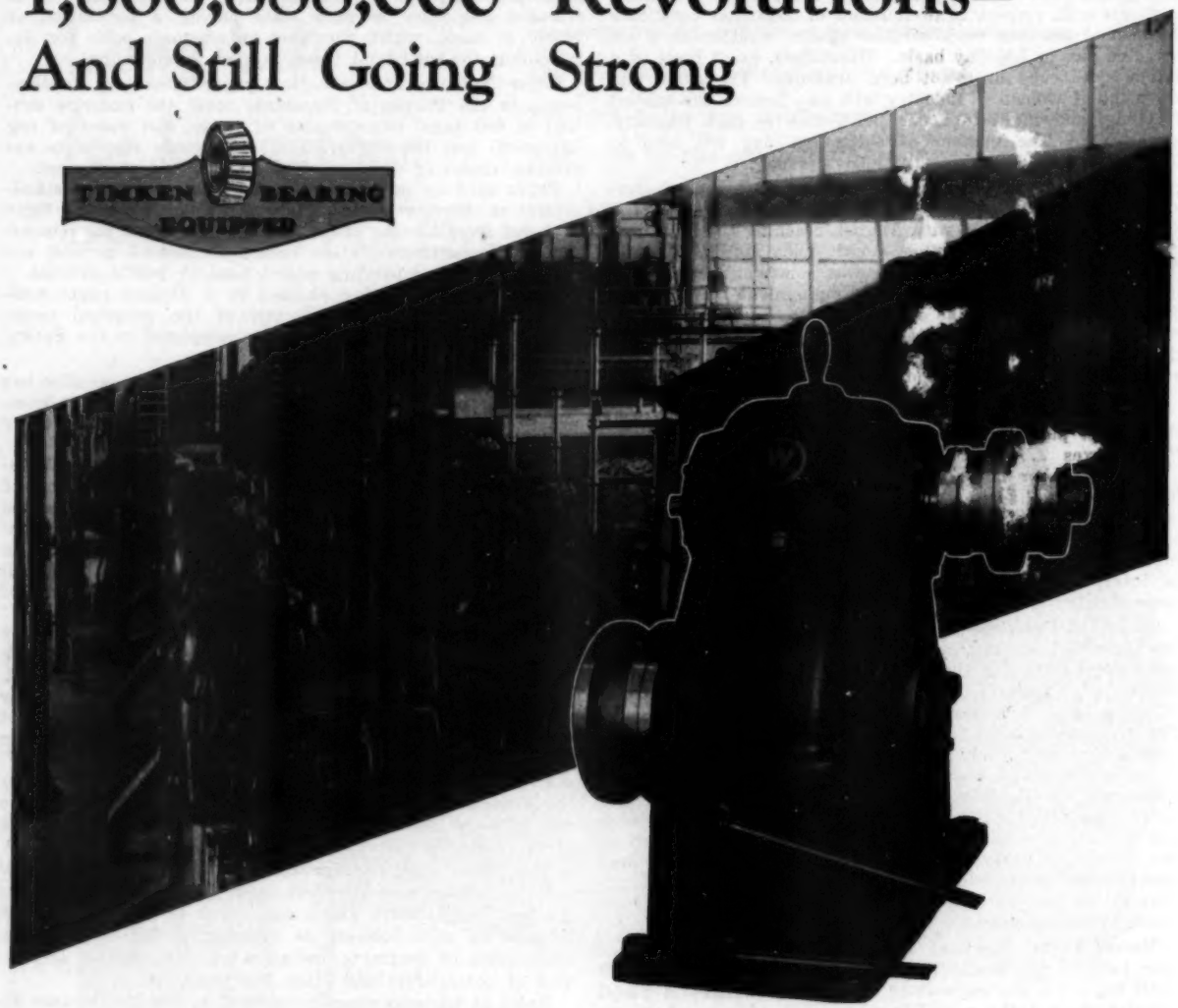
The paper bag manufacturers who applied for a trade practice conference represent seventy-five per cent of the grocers' bag industry and a conference has been authorized to take up such subjects as inducing breach of contracts, repudiation of contracts, imitation of trade marks, defamation of competitors and price discrimination.

Rules of business practice adopted by the kraft paper industry at a recent trade practice conference in an effort to eliminate unfair methods of competition and other destructive practices have been acted upon by the Commission, nine rules being affirmatively approved as covering unfair methods of competition, while eight rules covering other practices condemned by the industry were accepted as expressions of the trade.

Prison Industries—The problem of satisfactorily distributing prison-made goods is one which has troubled manufacturers for years, who claim that the competition of prison products was seriously affecting their interests, and so the Department of Commerce agreed to make a study of the entire problem. The results of this study have been embodied in a bulletin just issued, "Prison Industries," Domestic Commerce Series No. 27, discussing various phases of the prison industry in this country, outlining the chief commodities produced by states, locations of prisons, number of persons engaged, gross returns to state, suggested methods of marketing prison products, prison industries abroad, with a complete bibliography.

Waxed Paper Industry—The Federal Trade Commission has just released its action on the fifteen rules of business practice adopted by the waxed paper industry at its second trade practice conference, held in Washington several months ago. A complete report of the trade practice conference may be had from the Commission on request.

1,866,888,000 Revolutions— And Still Going Strong



A TYPICAL example of the splendid service being given by Timken Bearings in heavy duty mill drives is afforded by the Westinghouse-Nuttall Timken-equipped speed reducers shown in the above photograph.

These units, seven in all, were installed in April 1923, by the Washington Pulp & Paper Company and have been in constant operation ever since, averaging 6¼ days per week, 24 hours per day without any bearing trouble.

During this time the pinion bearings have made approximately 1,866,888,000 revolutions and the gear bearings 364,000,000 revolutions.

The record established by these Timken-equipped speed reducers is typical of Timken performance in all types of paper mill equipment. Throughout the whole paper industry Timken Bearings have set up new standards of endurance and economy.

THE TIMKEN ROLLER BEARING COMPANY, CANTON, OHIO

TIMKEN *Tapered Roller* **BEARINGS**

PACIFIC COAST

WASHINGTON

When the shipment of [illegible] tons of pulp on the steamer West Camargo went forward from Bellingham October 16, it marked the initial cargo of this product from the west coast to South America. Newsprint has been a main part of the cargoes of the McCormick Steamship Lines in which the West Carmargo is included, and the tonnage has increased almost with every trip of the vessels. Now paper mills have been installed near Buenos Aires and since this city is not easily accessible to the Andes forests nor the timber suitable for pulp manufacture, it is being found cheaper to ship the pulp from the north finished in the mills. It is expected that as the pulp cargoes [illegible] the newsprint orders may be reduced.

Puget Sound Mill Under Way

The Puget Sound Pulp and Timber Company is moving off to a fine [illegible] its new project at Everett. Much of the grading work [illegible] done and piling is being driven. The first structure to be completed will be for the offices of the company which officials say they hope to occupy before the first of the year. The company now has offices in the Medical-Dental building.

Included in the building group are two pulp storage and shipping buildings; a one-story digester building which will contain space for five units; a settling tank and cooler room; a one-story drying and machine unit 86 by 235 feet; a unit for four acid storage tanks; a building to handle five blow pits; a forge and blacksmith shop, and several other special units. Estimated cost of this project is $2,500,000, with equipment included. The Karlstad Machine Works of Sweden has received orders for some unusual paper machinery.

The Puget Sound Bridge and Dredging Company has received the contract for a dock, and the Puget Sound Power and Light Company will furnish power for the construction work and later for the operation of the plant.

The Olympic Forest Products Company has awarded the contract for general construction of its mill at Port Angeles to Christopher Kuppler of that town. This mill will have a capacity of 500 tons a day. The entire project, including a wharf and all equipment will represent an investment of $1,200,000. The company is a Zellerbach subsidiary.

The Crown-Willamette Paper Company is planning to build a mill at Cathlamet to cut up logs which are too short or otherwise unsuited for moving on a raft. Clearing of the ground has been completed and piling is being driven. The mill will be located on the Crown-Willamette boom.

The San Juan Pulp Manufacturing Company and the Pacific Coast Paper Mills of Bellingham, are each operating three shifts. The pulp company will ship cargoes to Ireland, France and Italy this year.

The Grays Harbor Pulp and Paper Company was apparently not responsible for the malady which appeared to be attacking fish in the stream near their mill last spring and which was thought by many to be caused by acid from the paper mill. At that time sporting interests and canners were alarmed at the loss of fish and the apparent illness of others that were examined, causing blindness. Now however the fish seem to be sound and well and fishermen and canners believe that the fish were suffering from some disease which has now vanished. Paper mill officials at the time doubted the idea that the mill waste was causing the malady.

OREGON

Baker Addresses Conference on Stream Pollution

The conference on stream pollution which was held in Portland in October was one of the most important yet sponsored by interests concerned with this problem. It was held at a time to accommodate C. M. Baker, engineer of the American Pulp and Paper Association who stopped in the city on his return from the T.A.P.P.I. convention at Tacoma. Mr. Baker pointed out the advisability of building up a consistent and established program through education of the public and other means, rather than by too much prohibition which often lacks effectiveness. He spoke of the laws and methods of Wisconsin, his home state, and the high points in other state laws were also stressed.

Co-operating in the campaign besides the pulp and paper interests are the state and city health offices; representatives from the faculty of the University of Oregon and from Oregon State College; representatives of the state fish and game commission and of sportsmen's organizations.

Oregon has already done considerable work on stream surveys and other preliminary features looking toward a more detailed program of regulation and protection. Prominent on the active committee is J. E. Hanney of the Crown-Willamette Paper Company. The latest session of the committee and outside interests was held in the health offices of Dr. Frederick Stricker in the Oregon building. The comments of Mr. Baker were received with deep consideration.

A report from Astoria indicates that the Northwestern Pulp and Paper Company may be revived and refinanced. This company after selling stock in excess of $200,000 some months ago, experienced financial difficulties and was forced to abandon its building project. The directors are now paying for an audit of the books by Sawtelle, Withington & Co., accountants of Portland, and it is thought that no definite action will be taken until this is completed.

Jaite Bag Plant Increases Production

Announcement that the Jaite Bag plant at St. Helens, will be greatly enlarged was made October 28 by H. Jaite of Jaite, Ohio, who is in the west in the interest of this expansion.

A new machine is being added which is the latest type in bag manufacturing equipment. It makes the bags, prints, sews and counts them in a continuous operation. The machine is 78 feet long and has a capacity of 80,000 cement bags a day.

The paper mill which supplies the kraft paper will be enlarged to take care of the increased bag manufacture and the working force will probably be almost doubled, according to Mr. Jaite.

Umpqua Offers Stock

The Umpqua Pulp and Paper company is offering subject to prior sale the unsold portion of $1,000,000 in 25,000 shares 8 per cent cumulative preferred stock fully paid and non-assessable par value $100 per share, and 25,000 full voting, fully paid and non-assessable common stock no par value. The company is incorporated with an authorized capital stock of $2,500,000, and as previously announced, plans to build a mill at Gardiner, a site of 53 acres having been acquired with good water and rail facilities and proximity to 25,000 acres of timber available through the company's subsidiary the Gardiner Mill & Lumber company. The object of the present stock offer is to provide funds for construction of the mill.

Joseph Kaster who has been connected with the pulp and paper industry of the northwest for 30 years is president of the company; W. L. Nederhoed is vice president and sales manager, and R. E. Loomis is secretary-treasurer. Percy A. Cupper and W. Lair Thompson are directors.

The proposed mill would have a production capacity of 100 tons unbleached sulphite pulp daily. The largest part of its product will go to the export trade.

St. Helens Stock Listed

The St. Helens Pulp & Paper Company's stocks and bonds were admitted to trading as a listed security October 28, according to report from the Portland Stock and Bond Ex-

WANTED . . .
A Slogan for
NORDSTROM VALVES

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$500
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Write a Slogan about NORDSTROM VALVES. You may win $250.00. Nineteen cash prizes totaling $500 are offered for the best slogans submitted. The manufacturers are seeking a slogan not to exceed 10 words that will suggest the service or function, features or an outstanding advantage of Nordstrom Valves. The slogan "Won't leak, Won't stick" is now used . . . but you no doubt can think of several that are far better. If you are unfamiliar with Nordstrom Valve service ask your Plant Engineer . . . or write for descriptive catalog. But in any event send in your slogans. You have 19 good chances to win. In the event of a tie for any prizes offered, each winner of the respective award will receive the same cash amount.

RULES
of Slogan Contest

. . . Anyone is eligible except employees of Merco Nordstrom Valve Co. or affiliated companies.

Slogan must not exceed 10 words. Any number of slogans may be submitted by same person. Use coupon below or separate sheet of paper. Contest closes December 31, 1929

CASH AWARDS	
First Prize . .	$250.00
Second Prize . .	100.00
Third Prize . .	50.00
4 Prizes, each . .	10.00
12 Prizes, each . .	5.00
TOTAL 19 CASH PRIZES	$500.00

• • •

JUDGES

The judges will consist of one official of the Merco Nordstrom Valve Company, one representative of a well known trade publication organization and one advertising counsellor.

FILL IN THIS ENTRY BLANK AND MAIL

MERCO NORDSTROM VALVE CO.,
343 Sansome St., San Francisco, Calif.

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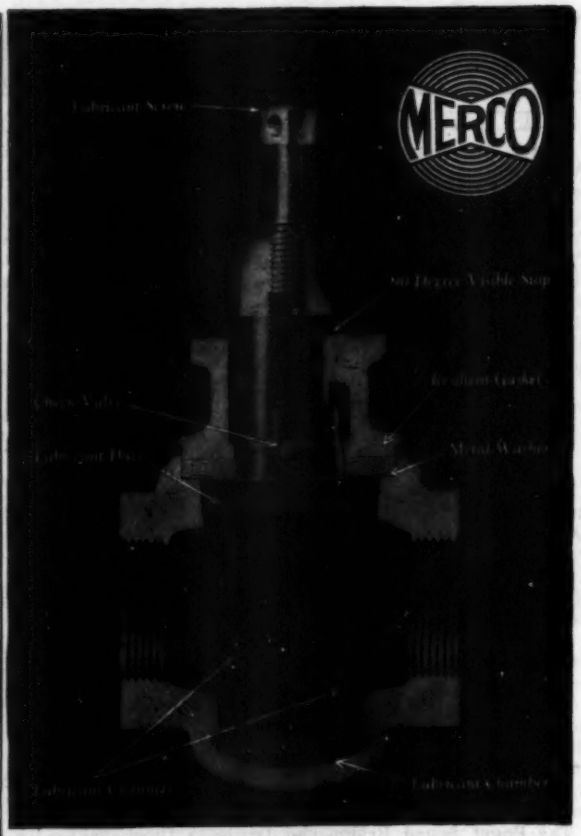
(Use separate sheet if insufficient space above)



Lubricant Seals the Valve Against Leaks

NORDSTROM VALVES are of the plug cock type, with lubrication and lifting features that make them easy and sure of operation. A stick of special "Merco" Lubricant is inserted under the lubricant screw. The latter, when turned, forces the lubricant down and around the plug. Automatic lifting effect of the lubricant insures freedom from sticking and allows access of the lubricant to the seat. Fluid and other material within the line cannot pass around the plug and leak out, or lodge in the seat. The plug is always easy to turn. Made in types and sizes to meet conditions in all industries.

Nordstrom Valves are made in 2, 3 and 4-way types. Sizes ¼" to 30" . . . for high or low temperatures . . . for high or low pressures. Special "Merco" lubricant for special conditions.

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New York: 11 W. 42nd St.
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Factories—Oakland, California; and Belleville, New Jersey
Canadian Manufacturers—
Peacock Bros., Ltd., Montreal, Calgary, Winnipeg, Vancouver
England—Audley Engineering Co., Ltd., Newport, Shropshire
Buenos Aires, Argentine—General Electric, Soc. Anon., Victoria 618 Esq. Pers.

change. As an indication of the efficient management of the company, the statement issued at the time of sale of first mortgage bonds shows that the interest was earned 5.8 times, or 2.7 times the interest for sinking fund requirements.

Max Oberdorfer is president and general manager of the company which was organized five years ago to manufacture sulphate pulp and paper at St. Helens, specializing in a high-grade kraft product which is distributed on contract solely by the Graham Paper company of St. Louis.

CALIFORNIA

The Consolidated Paper Box Co., of San Francisco, formed by a recent merger of seven box companies of this city, is getting under operation at its four factories located at convenient points in the territory. The plants concerned in the merger were the Boxboard Products Co., York-Stern Paper Box Co., Enterprise Paper Box Co., Gilman-Petterson Corporation, Thiebaut Bros., Raisan & Zaruba and the Independent Paper Box company. Will I. Warren of the last company is president of the new organization. E. L. Stern, formerly of York-Stern Co. is vice-president and general manager; L. A. Thiebaut is secretary, and Julian Hamerslag formerly of the Enterprise Paper Box Co. is treasurer. Chas. Stern is production manager for all plants.

The Blake, Moffitt & Towne headquarters at Fresno, is now in charge of B. M. Hoblick, well-known paper man of the west coast, who formerly lived in Fresno, but who has been for a number of years in charge of the coarse paper department of the company at San Francisco.

Frank Wilson, who has been with the Zellerbach Paper Company for almost 30 years, died at his home in San Francisco, in October.

L. F. Foster, sales manager on the coast for the Union Bag & Paper company, with offices at 311 California street, San Francisco, says that the products of the company's plant at Vancouver, Wash., are being distributed in channels directed from his office. Paper bags are gaining favor on this coast over more substantial containers as many of the cash and carry stores are cutting down overhead by selling in bulk and using paper bags as containers.

Rolin C. Ayres, advertising manager of the Zellerbach Paper Company, San Francisco, made a trip to Cleveland, Ohio, in October to address the Direct Mail Advertising Convention and Exposition of Printing on the subject "How West Coast Advertisers Make Direct Mail Pay."

John Mulkey who has been with the Portland offices of the Crown-Willamette Paper Company for sometime, and previous to that with other northwest companies, is now in the San Francisco office of the company.

SOUTHERN

Bank Statement Printed on Kraft Paper

The bank statement of the Hibernia Bank and Trust Co. at New Orleans, recently printed, reveals not only the resources of the bank but also one of the resources of the community, being printed on Kraft paper produced in one of the Louisiana mills.

Southern Division Supers Meet

At Monroe, La., on October 26, the annual convention of the Southern Division of the American Pulp and Paper Mill Superintendents Association closed an interesting session. Seventy-five men representing eleven Southern paper and pulp mills and firms connected with the industry were present.

The convention lasted two days and there was a varied program of discussions. The largest delegations were sent by the mills at Bastrop, Bogalusa and Monroe, La., and Camden, Ark. Carl Magnus, Richmond Va., first vice-president of the national association, was the principal speaker at the banquet. Dr. George J. Ritter, research worker in connection with the Forest Products Laboratory of Madison, Wis., gave an address.

NORTHERN NEW YORK

Improvements Under Way at Carthage Plant

Extensive improvements are being made at the plant of the West End Paper Co., Carthage, recently purchased by the Crown-Zellerbach interests. R. H. Lee, Chicago paper mill engineer, is directing the work. A contract calling for the construction of a new addition with 10,000 square feet of floor space has been awarded to Hodge & Foster, Watertown contractors. A crew of 100 men is busy and it is expected the work will be finished within the next two months.

The Crown-Zellerbach Co. has acquired a 147 inch paper machine from the Scott Tissue Co. It was used three years at the Scott plant at Chester, Pa. The machine has arrived in Carthage and will be installed as soon as the repair work is finished.

The belt drives which were used by the West End Co. are being replaced by electric turbine drives. The two paper machines with which the plant will be equipped will be driven by turbines as well as the wood grinding mill and beater room. It is expected that over 200 men will be employed when the mill is re-opened. E. B. Eddy is general manager of the Crown-Zellerbach interests at Carthage.

Bates Valve Plant Operating

Manufacture of wire ties has been started at the new plant of the Bates Valve Bag Corporation at Oswego. Eighteen machines for the making of the ties, which are used for fastening flour and other sacks and for binding concrete reinforcing materials together, have been set up. Some of the machines used in the process are still being operated in the Chicago plant. These will be shipped to Oswego in the near future. The company will also manufacture a number of other products, principally machines of an automatic type for filling bags with cement, plaster and other materials of a similar nature, and bag-making machines.

All production records at the plant of the Taggart Paper & Bag Corporation at Oswego were recently exceeded when the plant turned turned out and made ready for shipment in one day more than 400,000 bags for cement. These bags have the automatic valve, and the production bettered by more than 100,000 bags the estimated daily production of the plant when it was started a year ago. New machinery to speed up the production in the bag department has been added constantly. A new printing press has recently been installed.

The Ontario Specialties Co. of Watertown is seeking larger quarters with a view to expansion, according to Carl B. Martin, secretary and treasurer. Mr. Martin emphatically denied a rumor that the plant was to be moved to New York city.

Northern N. Y. Supers Meet

John Broughan of Utica was elected chairman of the Northern New York Division of the American Pulp & Paper Mill Superintendents Association at the annual meeting held October 12 in Watertown. Other officers chosen were: M. J. Argy, Niagara Falls, first vice chairman; A. W. Bronk, Herrings, second vice chairman; A. G. Wightman, Watertown, third vice chairman; H. R. Heuer, Newton Falls, fourth vice chairman, and David Kelly, Newark, N. J., secretary and treasurer.

Over 100 persons attended the convention at which Levi A. Fralick of Ogdensburg presided. Dr. J. E. Campbell of Watertown, president of the Dexter Sulphite Pulp & Paper Co., read a paper on "Mill Efficiency." D. L. Bellinger of

ANOTHER ONE OF THE 47 MANUFACTURERS OF MACHINERY
FOR THE PAPER INDUSTRY THAT USES SKF BEARINGS

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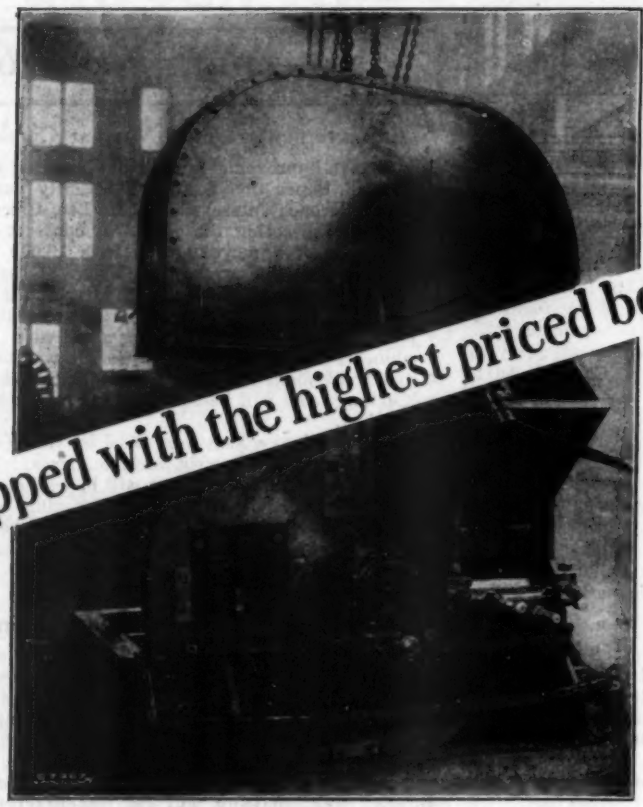

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YOU MAY BUY A BEARING AS A BARGAIN BUT TRY AND GET A BARGAIN OUT OF USING IT

for

Nothing is apt to cost so much as a bearing that cost so little

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Because Production Cannot Be Jeopardized by Bearing Trouble... Hesse-Ersted Uses SKF

RIGHT in the first paragraph of its publicity the Hesse-Ersted Iron Works gives full credit for the wonderful part SKF Ball and Roller Bearings play in the successful operation of their 63-inch wood chippers. Here's a job where precision and ruggedness must go hand in hand. Therefore, SKF are first choice...not on price but performance.

Supporting the huge, rapidly whirling disc, SKF Bearings easily take care of the heavy loads and thrusts imposed, without impairment of their original efficiency. In fact, wear is a negligible factor and bearing adjustments are never required. This is highly important on machines of this type where bearing trouble might prove costly and seriously affect production. Hesse-Ersted assures their customers of uninterrupted performance with SKF.

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SKF

Ball and Roller Bearings

Glens Falls spoke on the Glens Falls rolling machine screens. Other papers were read by R. M. Watts of Springfield, Mass., on "The Manufacture of Fourdrinier Wires", and by Harold Bing of the Textile Machinery Co. of Sandusky, O., on "The Fastest Machine of the Day."

A series of forestry meetings designed to interest citizens in reforestation were held in St. Lawrence county last month. Various speakers urged the county board of supervisors to avail themselves of the benefits of the Hewitt bill providing for state aid for counties that adopt a reforestation program. Meetings were held in Gouverneur, Canton, Potsdam, Massena and Ogdensburg.

Secretary of Commerce Robert P. Lamont has announced the appointment of George W. Sisson, Jr., of Potsdam, chairman of the New York wood utilization committee, to the executive committee of the national committee on wood utilization of the department of commerce. "Mr. Sisson and the other appointees", said Secretary Lamont, "have accepted service with the committee because of their interest in the movement to perpetuate our forests. The committee's part in this movement is the promotion of efficient wood utilization and the elimination of waste in wood using industries."

The Racquette River Paper Co. of Potsdam recently received a boatload of from five to seven thousand cords of pulpwood from Russia. The ship landed at Sorel, Que., and the wood was transferred to railway cars for shipment to Potsdam. The company received a trial shipment from the same source a few months ago. About 15,000 cords of pulpwood will be floated down the Racquette River next spring to the Potsdam plant. There was a drive on the Racquette this year after a lapse of several years. The drive will be operated by the Sisson-White which has just completed the skidding of the pulpwood in the Granshue section. With the coming of winter this wood will be hauled to Cheney's Eddy near Stark and at Warm Brook Landing near Higley.

NEW YORK CITY

Establishes Export Department

The Perkins-Goodwin Company, of 551 Fifth avenue, New York, announces the establishment of an export department which will be managed by Harry H. Meyer, who for the past 20 years has been manager of the paper department of the National Paper and Type Company, of New York. The new department will conduct a world-wide business in paper of various kinds, and is expected to be an important branch of the Perkins-Goodwin operations. This company has a record in the paper and wood pulp trade of over eighty years as importers of paper and pulp and sales representatives of paper and pulp mills in this country and Canada.

Mr. Meyer is particularly qualified for the direction of the export business of the company and is well-known throughout the paper trade. He resided for several years in the Latin America countries, and has traveled extensively among paper-consuming lands. The offices of the export department will be at 551 Fifth avenue, on the seventeenth floor.

Paper Concerns Merged

Two of the well-known paper houses in New York City, the Bertram Blake Paper Company, Inc., of 225 Varick street, and the Butler Paper Company, Inc., located in the Master Printers Building at Tenth avenue and Thirty-fourth street, were merged on October 1 under the name of the Blake-Butler Paper Company, Inc. Offices and warehouse of the new company will be maintained at the Varick street address.

Under the arrangement, the new company will continue to handle all papers heretofore carried by both concerns, and will be the exclusive agent in New York for all Butler brands of writing and printing papers. Bertram T. Blake is president and treasurer, and Miss Elsie C. Rauss is secretary of the new corporation. The personnel of both organizations will be continued practically without change and the consolidated company will have one of the strongest sales staffs in this city. The company is agent for many widely known mill lines of paper.

J. Henry W. Jonas, head of the paper firm of J. H. W. Jonas & Co., of 22 Spruce street, New York, died October 18 in the Jamaica Hospital of an apopletic stroke. Mr. Jonas, who was 62 years old, was stricken while hurrying through the Long Island Railroad station in Jamaica to catch a train. Funeral services were held on October 20 at the late home, 32 Littleworth Lane, Sea Cliff, L. I. A widow, and a son, Charles K. Jonas, who was associated with his father in business, survive.

A movement to establish a single organization headquarters for all branches of the wallpaper industry in this country was started during the annual meetings of the Wallpaper Association at the Hotel Commodore in this city during the week of October 14. The Association is composed of manufacturers in the industry. Wholesalers of wallpaper and manufacturers of raw stock will be asked to co-operate in the move, it was announced.

James P. Dudley, formerly with the Taylor-Logan Company in Holyoke, Mass., has joined the sales organization of the Crocker-McElwain Company and the Chemical Paper Manufacturing Company in the New York office of those companies at 41 Park Row. E. Franklin Miles, who has been with the Crocker-McElwain Company for some years, has also been transferred to the New York office.

James Horowitz, who has been manager in New York for the Butler Paper Company, Inc., will continue to represent the Butler Paper Corporations in the East and will have an office with the new Blake-Butler Paper Company, Inc., at 225 Varick street, New York. The local Butler merchandising business has been merged with the Bertram Blake Paper Company, Inc. Mr. Horowitz will also handle the Butler export business.

The Mayfair Paper and Twine Company, of New York City, has been incorporated under New York State laws to conduct a business in paper and twine in this city, with a capitalization of $10,000. A. Meltzer, of 1440 Broadway, New York, represents the new corporation.

WISCONSIN

Northern Operating New Machine

There is now in operation at the Northern Paper Mills, Green Bay, Wis., one of the largest and fastest tissue machines in the country, and the company is enjoying an output not previously experienced. The new "No. 7" machine has been put into operation, and two of the old machines installed when the mill was first built have been discarded.

This machine, built by the Beloit Iron Works, has a web 186 inches wide, an output of 1,200 feet a minute, and a capacity of 50 tons a day. Increased production at a lower cost has been made possible.

A new building was erected recently to house the machine, by enclosing a court between other mill units. Future expansion also was borne in mind, because there is room in the addition for another machine of like size. The company also has enlarged its warehouse and shipping space, its pulp storage and its clerical quarters.

These improvements have come about since the general management of the company was assumed several years ago by Judson G. Rosebush, now a vice-president of the concern. Finding that power costs were too high, he conducted the erection of two hydroelectric plants, one of which supplies current for the mill, and the other selling its power to a large public utility company. Obsolete equipment also has been replaced gradually so the mill is reaching a point

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PAPER

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Kalbfleisch facilities insure accuracy in specifications, promptness of deliveries; and close and intelligent attention to your needs is promoted by careful study of individual requirements.

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KALBFLEISCH

of maximum efficiency coupled with economy. Acquisition of the Tuttle Press Company recently was a move to provide a converting and sales outlet for a considerable portion of the products made by the Northern mills.

K. C. Co. Makes Report for Third Quarter

Substantial earnings for the third quarter of 1929 are reported by the Kimberly-Clark Corporation, Neenah, Wis., and an excellent showing for the entire year is thus predicted. Net sales of $5,761,459 for the quarter were the highest of the year, comparing with $5,668,137 for the second quarter and $5,348,032 for the first quarter. Since the net sales for the entire year 1928 were $21,533,263, the total of $16,777,629 for nine months shows up favorably.

Gross profits for nine months were $4,506,531 and the net was $2,178,797. This gives an earning of $4.35 on the common stock, exclusive of possible profits from the Spruce Falls Power and Paper Company, of which a half interest is owned by this company. The earnings for the entire year 1928 were $4.35 a share on the common stock. Current assets are $8,842,661 and current liabilities are $3,386,236. It is estimated that the earnings on common stock will be $5.50 a share for the year. Cash dividends have been $2.50 a share annually.

Good progress has been made by the Kimberly-Clark Corporation on the equipping of the former Lakeview Paper Company mill at Neenah, Wis., for production. The mill was bought from Sears, Roebuck & Co. and a large sum is being spent for new machinery and additions which will give greater operating space. The mill will produce wall paper, school papers of high quality and specialities. It is reported that the company will abandon one or two of its oldest mills which are obsolete, as soon as this one is ready for production. The capacity of the new mill will be about 45 tons a day.

Production has been started by the Wisconsin Carton Company, newly organized, at Stevens Point, Wis. One complete carton unit has been installed and is being operated on a nine and a half hour shift on multicolored food and merchandise cartons. Further units will be added after the sales have been built up. J. T. Mader, vice-president, is in charge of production.

Consolidated Now Making Book Paper

Groundwood book paper is being produced regularly now by the Consolidated Water Power and Paper Company at its main mill at Wisconsin Rapids, Wis., once devoted exclusively to the manufacture of newsprint. Most of the changes necessary for this shift in production have been made, including extensive building operations. The company was able to keep its mill in regular production while the rebuilding of machines took place, by operating part time on newsprint and part time on book paper.

Now the smaller machines are being devoted entirely to book papers and the larger ones continue to produce newsprint. Experiments have been conducted for a long time to produce novel news or high grade book that would take well on the market, and the results have been very satisfactory. The company, at the same time, improved the quality of its newsprint.

In order to enter the book market, the company added a 90-ton bleach plant equipped with Wolf vertical two stage bleachers; a new groundwood system for groundwood production, with copper piping entirely; a new finishing room to cut, bundle and wrap the paper; supercalender stacks to finish fine papers; equipment of machines with new fourdriniers including Beloit suction couches and press roll, high-speed shakes, double slices, jordans, double smoothing presses, metering systems of stock measure, etc.

Neenah and Menasha, important paper mill cities of the State, are strong for Safety. The second annual safety school, conducted one evening a week, has an enrollment exceeding 600, including both men and women. Prominent speakers are being heard, including Capt. Denny P. Upton, of New York City, who will give the address at the closing session. Others booked are: George P. Hambrecht, state vocational director; Victor L. Noonan, Rockford, Ill.; Officer Mulcahey, St. Paul; C. K. Boyer, manager of the Interlake Pulp and Paper Co., Appleton, Wis.; Ernest Corn, National Safety Council, Chicago, and D. D. Fennell, Chicago.

Dr. Fleck Leaves Forest Products

Dr. Louis C. Fleck, chemist in the section of Derived Products at the U. S. Forest Products Laboratory, left the laboratory November 1 to join the research staff of the Kimberly-Clark Corporation at Kimberly, Wis. Dr. Fleck will be in charge of organic chemical research at the Kimberly plant. He will make his home in Appleton.

Dr. Fleck graduated from the University of Wisconsin in 1917 and received his M. S. and Ph. D. degrees at the same institution in 1923 and 1927. He joined the Forest Products Laboratory staff in 1921 and was assigned to research in the chemistry of wood. He followed this line of investigative work up to the time of his resignation.

The mill recently abandoned at Kaukauna, Wis., by the Union Bag and Paper Company will not be used for paper manufacture again. The plant has been taken over by the Fox River Veneer and Basket Company.

Opposition to changes in classifications and districts which will mean higher freight rates has been voiced by paper mills. They are co-operating with the Wisconsin Manufacturers Association to acquaint the Interstate Commerce Commission with the injustices which will result from higher rates, and hope to avoid a situation which would place them at a disadvantage with other competitive districts.

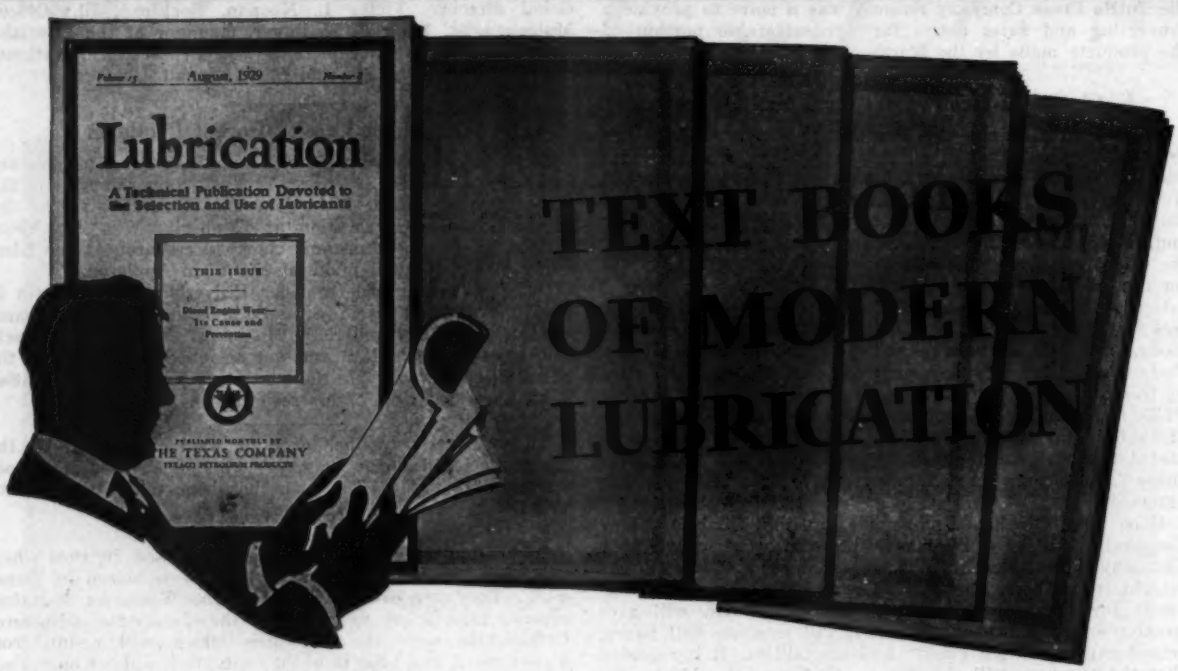
Construction of an addition to the finishing room is in progress at the Consolidated Water Power and Paper Company, Wisconsin Rapids, Wis. It will be 68 by 113 feet in size, and 41 feet high. Building operations also are in progress on a filter plant 52 by 112 feet, on top of which will be a mill unit 38 by 52 feet. Steel, concrete and brick are being used.

The Badger Paper Mills, Inc., Peshtigo, Wis., has adopted group insurance for employees, aggregating $250,000 in the Aetna Life Insurance Company. At the Consolidated Water Power and Paper Co., employees with a salary of less than $2,000 a year are now allowed to add $1,000 worth of group insurance at a premium of 60 cents a month. A total of $1,312,000 was added by this method, making the insurance in force $5,000,000.

Foremanship training classes are more numerous in Wisconsin paper mills and other industries than ever before. Some mills conduct their own classes and the remainder are held at vocational schools in the evening. The centers where these are located are: Wausau, Eau Claire, Rhinelander, Mosinee, Wisconsin Rapids, Green Bay, Kaukauna, Appleton, Neenah, Menasha, Fond du Lac, Two Rivers, Manitowoc, Sheboygan, Cudahy, Racine and Madison.

A gift of $25,000 has been made to Lawrence college by George A. Whiting, president of the George A. Whiting Paper Co., Menasha, Wis. This sum will be added to the endowment for instruction.

The North Shore Golf Club, owner of a new 18-hole course on the north shore of Lake Winnebago near Appleton and Neenah, Wis., has elected as its president F. J. Sensenbrenner, president of the Kimberly-Clark Corporation. M. A. Wertheimer, president of the Thilmany Pulp and Paper Co., is vice president, and John N. Bergstrom, of the Bergstrom Paper Co., is secretary-treasurer. The board of directors also includes Ernest Mahler, vice president of the Kimberly-Clark Corporation; Mowry Smith, of the Menasha Wooden Ware Co.; Kenneth Dickinson, Appleton, Wis.; D. K. Brown, vice president of the Neenah Paper Co., and C. B. Clark and Jack Kimberly, Neenah.



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"Lubrication" is issued monthly by The Texas Company. It is the leader in its field. No other publication covers the subject so thoroughly. Each issue is a complete treatise on some phase of lubrication.

The Texas Company since its inception has been deeply interested in effective lubrication. There is a Texaco Lubricant for every purpose and each has been developed to meet specific requirements. Millions have been saved —in power consumption, maintenance and lubricating costs through Texaco lubricants and lubrication service in all parts of the globe. Write The Texas Company and ask to have your name placed on the list to receive "Lubrication" regularly. There is no cost.

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Practical Helps for the Mill Man

Piling Pulp

PULP piles have their hazards. Occasionally a pile of laps or rolls tip over. If such an occurrence happens at a time when pulp is being removed from the pile by workmen, several injured employees may be the result. The cause can usually be traced to poor piling, questionable height of storage pile, or to yielding floors or foundations. Pulp should

Well arranged groundwood pulp pile

never be piled to cause overloading of floors or settling of foundations. Neither should it be piled over pipe lines or to obstruct sprinkler heads. Any pile of pulp should be "stepped back" toward the top and should be arranged so that the entire quantity of pulp in the pile is secure. Shifting of pulp in the pile is apt to make the pile dangerous. Care must be exercised, not only in piling, but also in the removal of pulp from a pile.

Sulphite Digesters Painted with Aluminum Paint

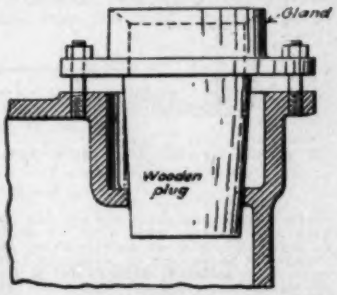
ONE sulphite mill superintendent was desirous of improving the appearance of the sulphite digester installation in the mill over which he had control. The building housing the digesters was only fairly well lighted, and the digesters were subjected to dirt such as is common in some of the plants. After the digesters had been cleaned they were painted with aluminum paint. The paint not only improved lighting conditions about the digester building, but also serves as an immediate tell-tale of liquor leaks about the digester. Any liquor on the silvery-colored shell of a digester is very easily detected. The paint seems to withstand the operating conditions very satisfactorily and has certainly improved the working conditions of the department.

Elimination of Water Hammer

WATER hammer may cause much annoyance in any plant where sufficient consideration has not been given to the layout of steam piping. Such annoyance can be avoided by the elimination of water pockets and by allowing free discharge of the water of condensation. In any steam piping installation, it is, therefore, imperative to pitch all pipes in the direction of the flow of steam, to end all main headers and important branches in a drop leg and to connect each of them to the drainage system. Any low point in the piping system should be drained and a drainage connection made to every fitting where there is any likelihood of trouble from water hammer. Likewise, a drain should be installed in the system at any point where a rise is necessary. Branch lines should never be taken from the bottom of main headers. They should be taken from the top of the main headers wherever possible. It is also important to give careful consideration to the installation of valves. Valves should be located so that it becomes impossible for them to form water pockets either when open or closed. Globe valves should always be set with the stem horizontal. Careful consideration of the entire piping system is absolutely essential if water hammer is to be eliminated, but the results obtained from a satisfactory layout more than justify the time and effort spent in planning.

Repairing Triplex Pump

A METHOD for keeping a triplex pump in operation while undergoing repairs is described by Earl Pagett in the August 20, 1929 issue of Power. The pump was apparently in bad condition, but could not be shut down long enough to completely overhaul. The plungers needed re-turning; the crosshead needed new pins and new bushings, and the crosshead shoes needed shimming-out and re-turning To keep the pump in operation meant that one cylinder had to be repaired at a time while the remaining two cylinders were kept in operation as needed. To perform the repair job, it was necessary to disconnect the connecting rod of the cylinder being worked upon from the crank pin and to remove the rod with its plunger from the cylinder. A wooden block was then turned to fit in the stuffing box, and the gland turned over and tightened down on the plug as illustrated. This simple kink permitted the pump to be operated, as needed, on the two remaining cylinders. At the same time it allowed a better overhauling job to be done than would have been possible if the work had been hurried.



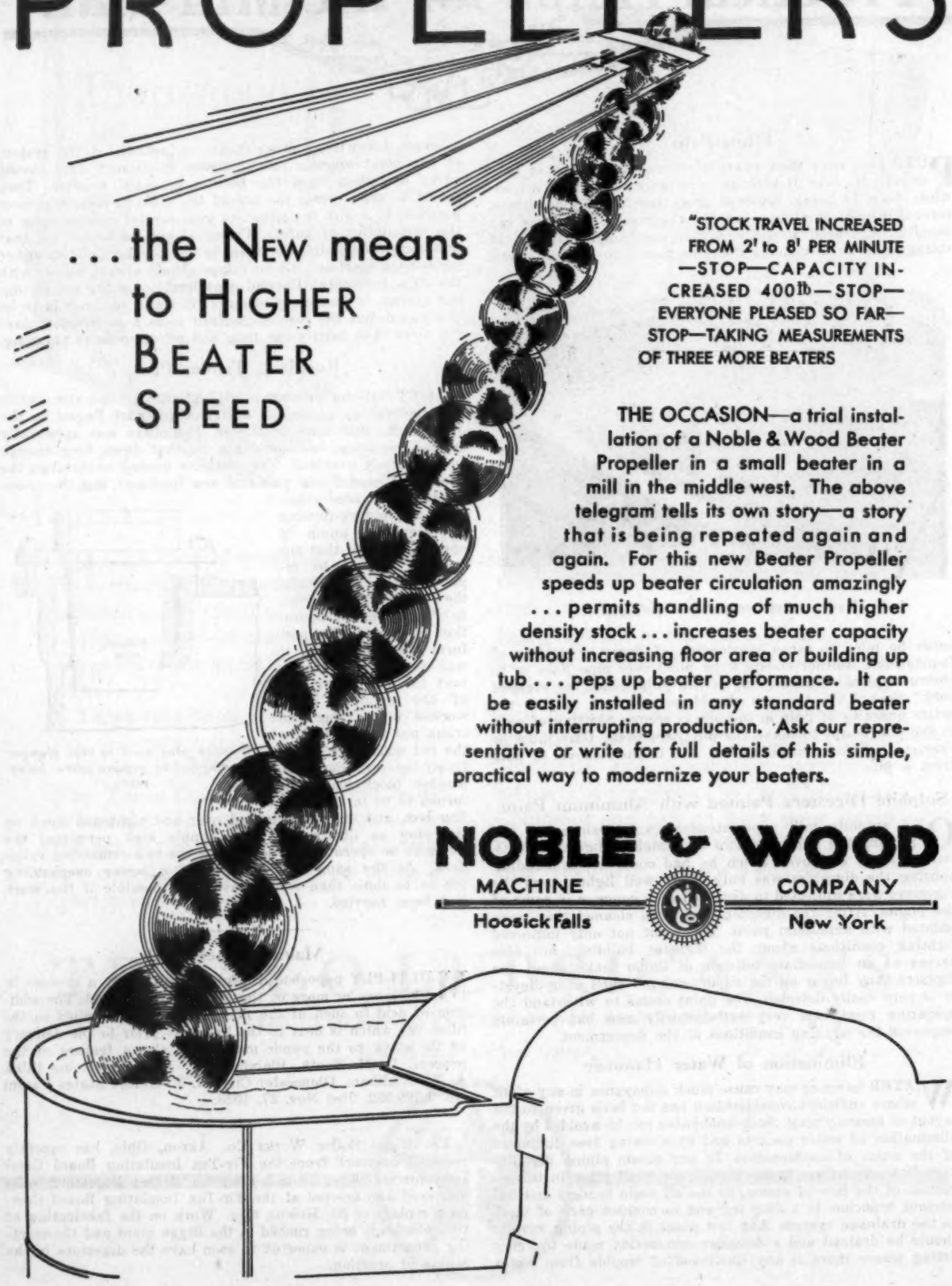
Wooden plug used to seal plunger opening while repairs were being made

Making Paperboard

MULTI-PLY paperboard is manufactured by a process in which one or more of the liner plies are sized. The addition of acid to such of the filler stock as is supplied to the filler vat which is next to the liner vat prior to the delivery of the stock to the paper machine is also a feature of the process. L. M. Booth, Plainfield, N. J., assignor one third, A. W. Wickham, Gloucester City, N. J. United States Patent No. 1,729,992, filed Nov. 27, 1928.

The Biggs Boiler Works Co., Akron, Ohio, has recently received contract from the Fir-Tex Insulating Board Company for six Biggs 18-inch diameter Rotary Digestors to be delivered and erected at the Fir-Tex Insulating Board Company's plant at St. Helens, Ore. Work on the fabricating of the rotaries is being rushed in the Biggs plant and the erecting department is expected to soon have the digestors in the course of erection.

PROPELLERS



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THE OCCASION—a trial installation of a Noble & Wood Beater Propeller in a small beater in a mill in the middle west. The above telegram tells its own story—a story that is being repeated again and again. For this new Beater Propeller speeds up beater circulation amazingly . . . permits handling of much higher density stock . . . increases beater capacity without increasing floor area or building up tub . . . peps up beater performance. It can be easily installed in any standard beater without interrupting production. Ask our representative or write for full details of this simple, practical way to modernize your beaters.

NOBLE & WOOD
MACHINE COMPANY
Hoosick Falls New York

Institute of Paper Chemistry

The establishment of the Institute of Paper Chemistry, a graduate school for the training of chemists for the pulp and paper industry, is to be effected at Lawrence College, Appleton, Wis., according to announcement recently made.

The Institute of Paper Chemistry, organized by the college and financed by the paper industry of Wisconsin, fully ninety per cent of the paper mills being represented, is the realization of an ideal cherished by Henry M. Wriston, president of the college, ever since his connection with Lawrence College began in 1925.

The hope now realized will be an important feature of the program laid out by President Wriston by which the college should make a vital and definite contribution in service to its community and state.

The institute which will place Lawrence College in a position of unique usefulness both to industry and students, has received the personal endorsement of President Herbert Hoover and Dr. Julius Klein of the United States Department of Commerce.

The institute is organized primarily to provide training for paper chemists. Requirements necessarily met in an institute of this nature call for an extensive research library and information service, complete and well equipped laboratories for chemical research, a faculty of specialists and technical experts familiar with the field of paper chemistry. The aim of The Institute of Paper Chemistry to be a part of Lawrence College will be to provide suitable equipment and faculty leading to the possibility of outstanding results in the field of chemical research.

In order that such an institute may fulfill the needs of the paper industry, it will be organized as an affiliated institution under the control of a Board of Governors representing both Lawrence College and the paper industry. Participating mills will have representative membership on the board. This method of organization will tend to preserve as near an ideal balance as possible between the academic and industrial phases of the work of the institute.

The institute will have three main functions:

(1) To educate along broad lines students who show adaptability and proficiency in pulp and paper chemistry a field heretofore untouched in this area. To offer graduate work in paper chemistry to selected students. This would be supplemented by part time work in the industrial laboratories and employment during vacation periods in various mills. This contact with the industry should begin in the undergraduate years. Graduate students might work in pairs, one working in the institute while his partner worked in the industry. They would change places every six weeks; giving them the opportunity actually to test and develop their academic training in an industrial atmosphere. Vacation employment, plus personally supervised work, would create a practical understanding of industrial methods and also would serve to make the student "paper mill conscious." Industrial fellowships could be established to foster the continuation of study.

(2) To place at the disposal of the industry and students the facilities of a comprehensive research library and authoritative information service covering subjects relating to the paper industry and to paper chemistry.

(3) To centralize and co-ordinate research in the interest of the whole industry and, when desired, facilitate research in specific problems of individual concerns.

Wyandotte Soda Ash Now Shipped in Paper Bags

Announcements of the Michigan Alkali Co., of New York City and Wyandotte, Mich., are notifying the company's customers that future shipments of soda ash may be made in Taggart-Bates multi-wall paper bags. Each bag will carry 100 pounds.

The new container, which is built up of 5 plies of a special quality of kraft paper, has many advantages claimed for it, among them economy of time and labor, and reduction of loss. Each bag is virtually a nest of five separate bags united into one. The makers guarantee these bags against leakage, breakage and moisture.

In further comment upon their adoption of the paper containers, the Michigan Alkali people claim that the new paper bags cut down considerably the amount of dust raised in handling. Paper in its very nature is impervious to dust, and with their multiplicity of paper envelope these bags arrive at the plant as clean as any typical paper-wrapped bundle. They remain clean. Furthermore, as an aid to rapid handling, the new paper bags open easily. They empty clean; paper, having no meshes, shows no tendency to retain any pulverized material. The entire contents slides right out.

The many industries using soda ash are expected to welcome with enthusiasm this new container for Wyandotte Soda Ash. Through the adoption of the hundred pound unit the speed of handling is increased. Batches may be proportioned without weighing, in many instances, as there is no loss of material in transit or in dumping. Storage problems are reduced, as there need be no fear of damage by moisture or the intrusion of foreign materials.

Naturally, the new container was not adopted without exhaustive preliminary tests. These multi-wall paper bags have been in use in other industries for many years. In every case they have proved so satisfactory that the consumption increases by many millions yearly. Michigan Alkali Company is the first to introduce them for soda ash.

Employees of the Nekoosa-Edwards Paper Co., Port Edwards, Wis., have enjoyed the presence this summer of the company's tri-motored cabin monoplane. Free rides have been given to 2,640 workers and their families over a period of twelve Sundays. Invitations were extended to 250 each Sunday and the response was surprising. The company also used the plane in a unique manner recently when a suit against it was being heard in the courts on riparian damages. The jury was taken in the plane over the area supposed to be affected by high water.

STATEMENT OF OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912,

Of The Paper Industry, published monthly at Chicago, Illinois, for October 1, 1929.

State of Illinois, County of Kane, ss.

Before me, a Notary Public in and for the State and county aforesaid, personally appeared Edward B. Fritz, who, having been duly sworn according to law, deposes and says that he is the publisher of The Paper Industry and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, Edward B. Fritz, 356 Monadnock Bldg., Chicago, Ill.; Editor, A. Scott Dowd, 356 Monadnock Bldg., Chicago, Ill.; Managing Editor, A. Scott Dowd, 356 Monadnock Bldg., Chicago, Ill.; Business Managers, Edward B. Fritz, 356 Monadnock Bldg., Chicago, Ill.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders, owning or holding one per cent or more of total amount of stock. If owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.) Edward B. Fritz, 356 Monadnock Bldg., Chicago, Ill.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the six months preceding the date shown above is ..... (This information is required from daily publications only.)

EDWARD B. FRITZ.

(Signature of editor, publisher, business manager, or owner.)

Sworn to and subscribed before me this 26th day of Sept., 1929.

[SEAL] W. B. LATHROP, Notary Public.
(My commission expires July 11, 1930.)

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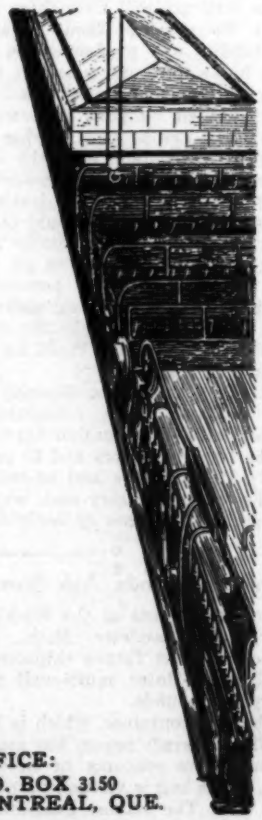

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Canadian News

Position of Paper Industry Reviewed

In the October commercial letter of the Canadian Bank of Commerce, a special article is devoted to a review of the growth of the paper industry in Canada.

The development of the Canadian pulp and newsprint industry must be regarded as one of the commercial wonders of recent times, but, as has so often happened before in the building up of a new industry, enthusiasm outran even the most favorable prospects, and a year or so ago it was seen that the Canadian newsprint industry had expanded in advance of its market. It is only fair to say, however, that similar conditions arose in every other large producing country and that the length of time required in the construction of paper mills makes it necessary always to have some surplus capacity. Furthermore, an exceptional increase in newsprint consumption in the United States, owing to a few years of remarkable growth in the circulation and size of publications, caused a mistaken impression as to the normal annual increase in demand.

When it was evident that the stability of the industry was threatened, the governments of Ontario and Quebec felt concern, for they had granted timber-cutting and waterpower rights to new companies, believing that these privileges would yield a reasonable profit without embarrassing old established mills and the many individuals dependent for a livlihood on the sale of wood from their own properties. The governments, therefore, expressed a desire that the industry should adopt a rationalized program, and it may be noted that their request was welcomed by several producers. There was no outward sign of governmental domination or control, but it is clear that failure to observe the request might easily have led to an upward revision of stumpage rates or a refusal of the governments to renew timber-cutting licenses. The producers are to be commended for the spirit of co-operation which after some months of negotiations, resulted in a decision that operations should not be at a greater rate than the market required, that the business should be shared by all mills on the basis of capacity, and that the prices quoted should be uniform.

The constructive step taken by the Canalian producers probably prevented utter demoralization of the world industry, from which some of Canada's competitors, with fewer natural advantages, would have been the worst sufferers. There seems to be no cause for objection on the part of the publishers, for curtailment of production as a whole is not part of the agreement, and the market will be fully supplied. Regarding present prices, these are cheaper than for some years and are close to production costs. A futher factor, probaly the most important of all, is that the agreement permits of a necessary conservation of Canada's wood resources, which are counted upon to furnish for a long time more than one-third of the paper that carries news to the civilized world.

At a recent meeting of the Executive Committee of the Pulp and Paper Research Association Building, the final report of the erection of the building, prepared by Secretary Beck, was presented and approved, thus ending the work of planning, finding funds and erection of that building. There was shown to be the sum of $7,520.53 remaining to the credit of the corporation building account, and this unexpended balance was transferred to the general fund of the association.

Canadian newsprint mills operated at 91.3 per cent of rated capacity in September, the highest percentage for the year, and produced 227,665 tons of paper. The consumption of newsprint in the United States for the first nine months of the year has increased about 7 per cent over the first nine months of last year. These two facts taken together would indicate that the newsprint industry at the moment has little cause for complaint. Many industries, both in Canada and the United States, would regard themselves as very fortunate if they were operating at over 90 per cent of their capacity; but operating ratio is not the only factor in profitable operation.

Hearst May Build in Newfoundland

In certain quarters the question of the future price of newsprint and the report of the Hearst proposals for newsprint manufacture in Newfoundland are being linked together. There seems to be an inclination to believe that the news from Newfoundland had been timed to coincide with the discussion now going on in Montreal regarding the contract price for newsprint next year. It is pointed out that the Hearst interests precipitated the crisis which dealt such a blow to newsprint prices on the last occasion, and the question is asked whether this suggested plan for making Hearst independent of Canadian sources for newsprint may be a move to suggest caution in any proposal for the upward revision of the prices when the annual contracts are up for consideration.

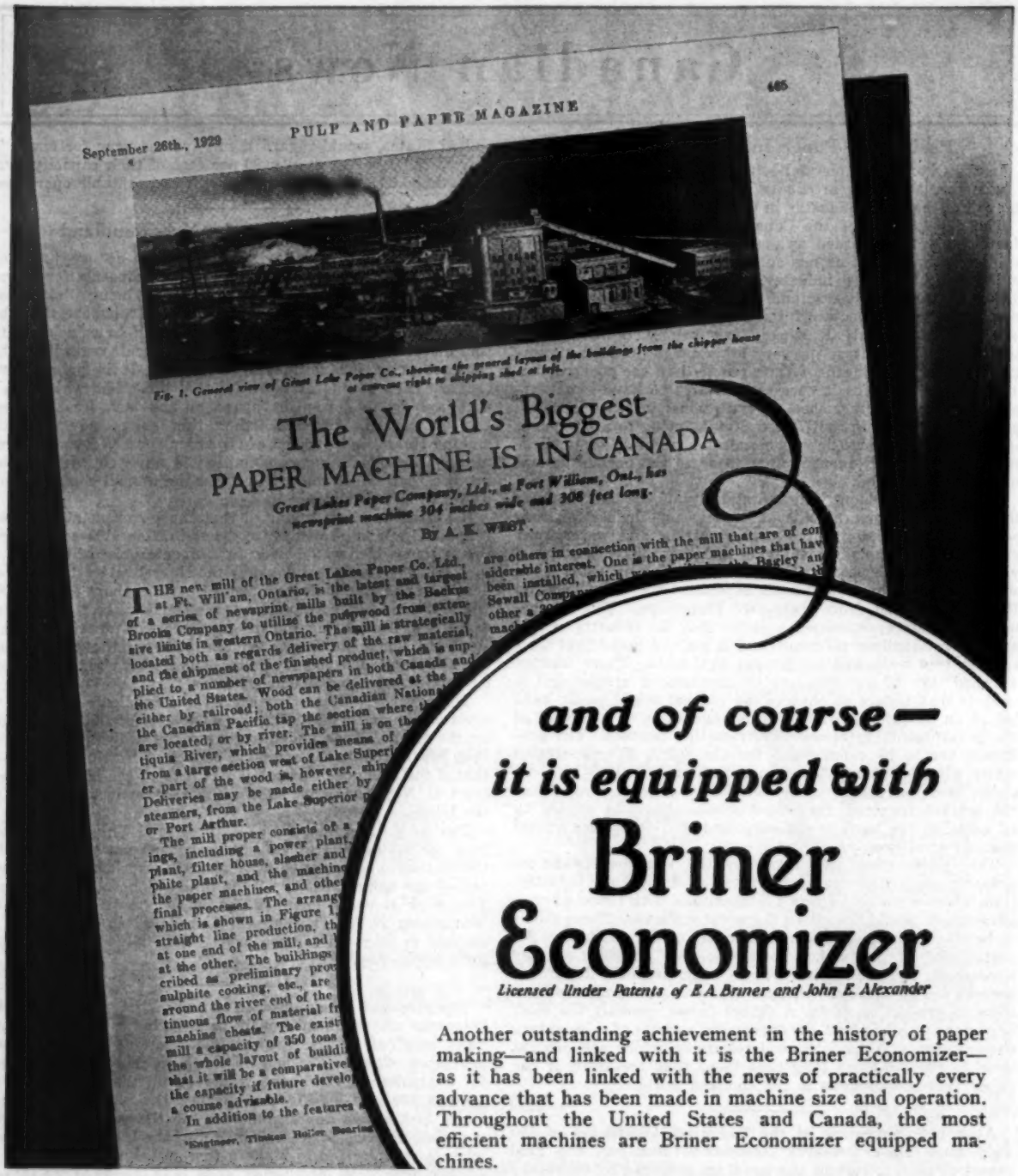
Nevertheless, it is admitted that the government of Newfoundland might be willing to grant considerable concessions to any firm which would bring to it an enterprise of the size of that said to have been mooted by the Hearst interests. Further details of the plan indicate a project costing about $17,000,000, which would include a dam across the Gander River, cutting off a new outlet diverting the water of the system from Gander Bay into Bonavista Bay, a concession from the government including a $15,000,000 guarantee, and timber rights in Labrador embracing about 20,000,000 cords.

The reports indicate that the Hearst syndicate proposes to erect a pulp and paper mill with a capacity of 1,000 tons daily on the Island. It is understood that the project has not yet been considered by the executive council of Newfoundland, but that if the sale goes through it will involve the largest timber tract in Newfoundland, situated in the northeast portion of the Island.

The Anglo-Newfoundland Co., at Grand Falls, Newfoundland, is having five of its six newsprint machines reconditioned, and it is expected that when the work has been completed the daily capacity of the mill will be about 400 tons. The work is being done by the Bagley and Sewall Co., of Watertown, N. Y. The newsprint produced at Grand Falls is shipped to England for the use of the Daily Mail and other Rothermere papers.

The proposed Dominion-wide census of the standing timber resources will commence early next spring, according to advices received by the Crown timber agents in the various provinces. Canada has had no check on the standing timber for a number of years, the reserves still remaining fixed at around 350,000,000,000 feet, despite the huge annual cut. Early last spring representatives for the various provinces met Hon. Charles Stewart, Minister of the Interior at Ottawa, when it was decided to make a thorough survey. Hon. F. P. Burden, provincial minister of lands, is in charge of the survey in British Columbia.

At Humbermouth, near Corner Brook, Newfoundland, a boat is being built for pulpwood according to a patented design developed by Prescott Fisher of Corner Brook. The boat will be 185 feet long and have a 40-foot beam, to carry about 600 cords of pulpwood. The compartments are 24 by 20 by 20 feet, with side hatches which are not intended to be watertight but merely to hold the wood in place and permit quick unloading as well as to present a smooth surface to the water. The hull is built of wood and, except at the bow and stern, is about 6 feet in depth, calked both top and bottom. When the boat is fully loaded, the midships portion is completely submerged.


September 26th., 1929
PULP AND PAPER MAGAZINE
485
Fig. 1. General view of Great Lake Paper Co., showing the general layout of the buildings from the chipper house at extreme right to shipping shed at left.
The World's Biggest
PAPER MACHINE IS IN CANADA
Great Lakes Paper Company, Ltd., at Port William, Ont., has newsprint machine 304 inches wide and 308 feet long.
By A. K. WEST.
THE new mill of the Great Lakes Paper Co. Ltd., at Ft. William, Ontario, is the latest and largest of a series of newsprint mills built by the Backus Brooks Company to utilize the pulpwood from extensive limits in western Ontario. The mill is strategically located both as regards delivery of the raw material, and the shipment of the finished product, which is supplied to a number of newspapers in both Canada and the United States. Wood can be delivered at the mill either by railroad; both the Canadian National and the Canadian Pacific tap the section where the timber limits are located, or by river. The mill is on the Kaministiquia River, which provides means of transportation from a large section west of Lake Superior. The greater part of the wood is, however, shipped by rail. Deliveries may be made either by rail or by boat, by steamers, from the Lake Superior ports of Fort William or Port Arthur.
The mill proper consists of a number of buildings, including a power plant, a sulphite plant, filter house, slasher and finishing room, the paper machines, and other buildings for the final processes. The arrangement of the buildings, which is shown in Figure 1, is that of a straight line production, the wood entering at one end of the mill, and the finished paper leaving at the other. The buildings are arranged as described as preliminary processes, such as sulphite cooking, etc., are carried on around the river end of the mill, and the continuous flow of material from the wood room to the machine chests. The existing mill has a capacity of 350 tons per day, and the whole layout of building is such that it will be a comparatively simple matter to increase the capacity if future developments make such a course advisable.
In addition to the features of

and of course—
it is equipped with

Briner Economizer

Licensed Under Patents of E. A. Briner and John E. Alexander

Another outstanding achievement in the history of paper making—and linked with it is the Briner Economizer—as it has been linked with the news of practically every advance that has been made in machine size and operation. Throughout the United States and Canada, the most efficient machines are Briner Economizer equipped machines.

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Big Merger Goes Through

At a special meeting held last month, shareholders of Canada Power and Paper Corp. gave their approval to the offer made to shareholders of Wayagamack and Port Alfred for an exchange of their shares for securities of Canada Power and Paper. Approval was also given to a proposal to increase the authorized capital from 750,000 shares to 2,000,000 shares in order to permit of the issuance of new shares in connection with the acquisition of the two companies. In order to permit the addition of some of the members of the executives and directors of the acquired companies, authority was also given at the meeting to increasing Canada Power's directorate from 13 members to 18. C. R. Whitehead, president of Wayagamack, who founded the company, was added to the Canada Power board of directors.

A controlling majority of the shares of Port Alfred and Wayagamack have already been deposited with the Montreal Trust Co. for an exchange against Canada Power securities, so that the merger of the three companies is now assured. Adjustment of the dividend has been made in the case of Wayagamack, the rate declared for the third quarter being 69 cents as against 75 cents per share which was the previous rate. The debentures apportioned to Wayagamack holders will have the first coupon dated January 1st, 1930, in order to make them correspond to Laurentide debentures presently outstanding.

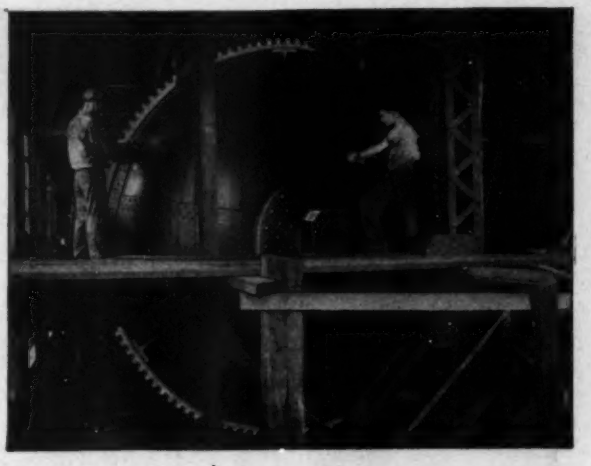
On the invitation of Charles Price and Edward Flynn, manager of the large paper mill of Price Bros., at Kenogami, members of the Parliamentary Press Gallery, of Quebec City, were shown through the entire plant and inspected the process of making newsprint, wrapping paper and cardboard. Afterwards they were entertained at luncheon at the Kenogami staff house. Prior to the visit of the mills, the visiting newspapermen paid a visit to the tomb of the late Sir William Price, which stands on a high bluff overlooking Chute à Caron, on the Saguenay River, and a wreath was deposited on the monument by Mr. Abel Vineberg, president of the Quebec Press Gallery.

The Quebec Pulp and Paper Corporation, which is controlled jointly by Price Bros. and by Port Alfred Pulp and Paper Corporation, is dismantling the groundwood mill at Val Jalbert, which had a capacity of 125 tons per day, and which has been inoperative for some time. This has been decided upon owing to the depressed state of the groundwood market. The company has two other plants at Chicoutimi, with a capacity of 200 tons per day, and these have continued operating.

Price Bros. and Co.'s Donnacona wallboard mill, which is to have a capacity of 55 tons or 150,000 square feet daily, is to be ready for operation by January 1st.

Further development of the immense hydroelectric power resources of the Province of Quebec is signalized by the construction of a new power house on the St. Anne River, in the vicinity of St. Raymond by the Ford Co., of Portneuf. Since the beginning of June, the engineering contractors on the new development have had about 100 men steadily employed on excavation work at the site of the new dam, which, when completed, will have a 100-foot head. The new plant will have a maximum capacity of 62,000 hp., a large proportion of which will be used in the operation of the company's mills.

It is understood in Montreal, though no official announcement has as yet been made, that the E. B. Eddy Co., of Hull, which is closely affiliated with International Power and Paper Co., is having plans made for a new $1,500,000 mill at Hull, on a site already owned by the company, to have five fine-paper machines. If this proves to be true, it may throw a considerable tonnage of fine paper on the market, which may be slow of absorption; though of course it would take several months



Installing segmental gear on a Biggs Rotary Digester.

Twenty Years' Service at $1.30 Annual Upkeep

Biggs Rotary Digesters are accurately fabricated and erected. Since 1887 Biggs has been serving the paper industry with globe and cylinder rotary digesters and similar equipment. Many of these old installations are still in active service. Repeat orders indicate complete satisfaction.

Records of over twenty years' service with a maintenance expense of $26.00 will indicate the heavy "built in" factor of safety to be found in Biggs equipment.

A new folder, "Unusual Steel Plate Construction", shows riveted and welded digesters. It is ready to be mailed you.

The Biggs Boiler Works Company
East Buchtel and Case Avenues
AKRON, OHIO
NEW YORK - CHICAGO - DETROIT

BIGGS ROTARIES *for years of dependable cooking and bleaching...* Biggs

With the regularity of time and tide — newspapers.

Uniform wood pulp continuously, unfailingly, NORTON pulpstone.

NORTON COMPANY, WORCESTER, MASS.

Canadian trade now supplied from Canadian plant.

Grinding Wheels
Grinding Machines

NORTON
PULP STONES

Refractories - Floor
and Stair Tiles

to build the mill and bring it into operation. The company already has several machines making semi-fine papers and it is thought that these may be replaced by new equipment.

St. Lawrence Paper Shows Surplus

St. Lawrence Paper Mills Co., Ltd., has issued a financial report covering operations from the date of reorganization, May 8, 1928, to June 30, 1929. For that period, profits are shown at $1,430,733, before providing for depreciation. Deduction of depreciation at $342,519, left net profit at $1,088,-214. Deduction of preferred dividends at $888,770, left an earned surplus of $199,443, which is equal to practically 40 cents per share on the 500,000 shares of no-par-value common stock which the company has outstanding.

In the course of his remarks to shareholders, President Ernest Rossiter stated that during the past year the company had installed two additional paper machines with all necessary auxiliaries to make the plant a complete six-machine mill, with an annual capacity of 150,000 tons. Although the company had contracts for the sale of its entire output, including the paper to be made on the two new machines, conditions in the paper market compelled it to curtail production to such an extent that no benefits have yet been received from the additions. No interest in connection with the construction progress was capitalized, all interest and dividend requirements being paid from earnings.

Unit shareholders of the company have been officially notified that the last call will not be made and it will, therefore, be in order for them to present their certificates on November 2, 1929, for exchange into preferred stock, common stock and subscription warrants in accordance with the terms of the allotment certificates.

Since the beginning of the year, the Port Alfred Pulp and Paper Corporation has been making insul board, a laminated wallboard that is made in no other mill. It is made from groundwood screenings. The manufacture is handled through the Canada Power and Paper Corporation, and the sales through Building Products, Ltd., of Ville Lasalle, a suburb of Montreal.

Paul-Emile Piché, of the engineering department of International Paper's Three-Rivers mill, has left to accept an important position at Antwerp for the Belgian government, in connection with the paper industry.

ONTARIO

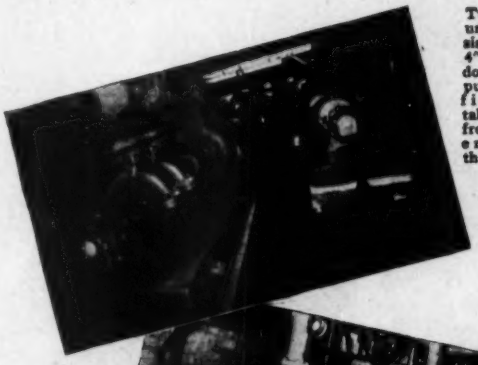
The Backus-Brooks Co. is considering the advisability of erecting a fiber board plant at Fort William. Plans for the additional unit are not yet completed, according to S. B. Backus, vice-president of the company, but the prospects are good. In discussing the paper situation, Mr. Backus said that the outlook for the immediate future was, in his opinion, brighter than for sometime. The mill at Fort William is turning out over 300 tons of newsprint daily, and there is every indication that the present rate of production will be continued.

Mill Safety Thoroughly Discussed

Institution of a comprehensive system of thorough physical examination of all applicants for employment as a potent factor in the reduction of accidents and consequently of compensation costs, was proposed before the Ontario Pulp and Paper Makers' Safety Association in session at Fort William, last month. Delegates to the meeting believed that some such method must be adopted if accident and compensation problems facing the pulp and paper industry of the province, together with the lumber industry, are to be satisfactorily solved.

Reference to the proposed medical examination of persons before being employed was also made by Dr. W. J. Gunne, of Kenora, and Dr. J. C. Gillie, of Fort William, both closely identified with the industry. Frequent medical examinations of men employed in the camps of pulp and paper companies

Pumping costs are low at Bird & Son, Inc.



Two boiler feed units, each consisting of two 4" two-stage double suction pumps. The first pump takes water from the heater, puts it through the economizer to the second pump which delivers it to the boiler.

Three 8" Warren single stage, double suction pumps for general mill supply circulating system.

Five of a group of eight Warren white water pumps. 8" single stage, double suction, open impeller type.

3 years ago 3 Warren Centrifugals were installed at the East Walpole plant, maintenance and operating costs were checked, compared, proved low; initial efficiencies maintained. As a result, additional Warren Pumps were ordered for other services, today 20 are in operation in this and the Phillipsdale, R. I. plant.

Advanced design and construction are responsible for the low pumping cost per year of Warren Pumps. Liberal clearances protect case rings from wear and maintain the pumps' original efficiencies for a long period of time; shafts are extra large at impeller and bearings, preventing vibration and deflection; tongue and groove construction is used on all interior parts eliminating bolts or pins liable to work loose and cause trouble.

Other important advantages are described in Bulletins covering Warren Centrifugal and Reciprocating Pumps for every service. Write for copies.

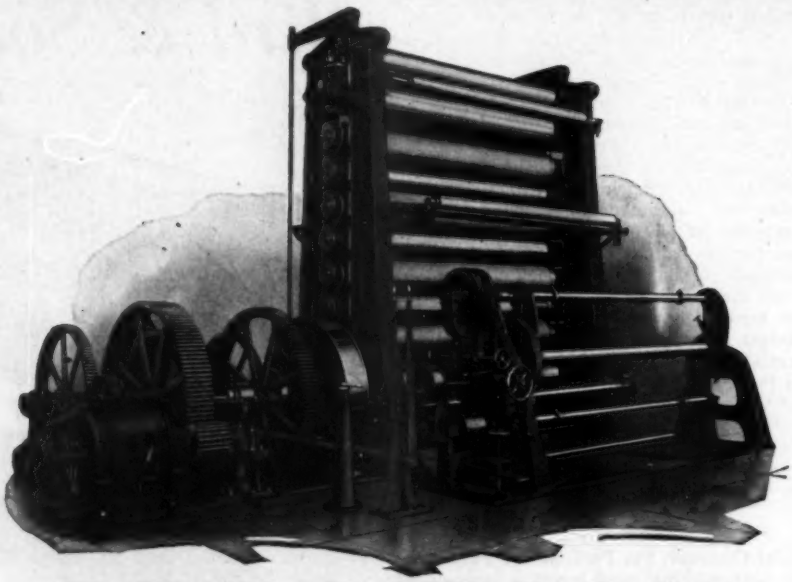
Warren

Steam Pump Company Inc. — **Warren Massachusetts**

Atlanta, Boston, Charlotte, Cleveland, Dallas, Kansas City, St. Paul, New Orleans, New York, Oklahoma City, Philadelphia, Pittsburgh, San Francisco, Toronto, Scranton, Seattle, St. Louis

3191

HOLYOKE



PRECISION

HOLYOKE Precision is really the result of continuous contact for 65 years with the big-and-little problems of the mill. To analyze exactly the special needs of the paper maker and to build *precisely* to his requirements,—that is the basis of HOLYOKE Service.

HOLYOKE invites you to consult with their Engineers when planning the purchase of Paper Mill or Wood Pulp Mill equipment. It pays to buy that extra percentage of experience with every dollar you spend.

Write HOLYOKE MACHINE COMPANY, HOLYOKE, MASS., Manufacturers of Super Calenders, Platers, Cotton and Paper Rolls, Washing and Beating Engines, Wood Pulp Grinders, Barkers, Chippers, Rag and Paper Dusters, Rag Gutters, Hydraulic Pumps and Presses, Hercules Water Wheels and Governors.

The HOLYOKE MACHINE COMPANY

FOUNDED 1863

should also be made, both physicians agreed, to avert possible spread of contagious and dangerous diseases.

A. R. White, chief sanitary inspector for the Canadian National Railways, asserted that the existing system of seasonal employment in the region proves a drawback to companies attracting a good type of worker. Continuity of service, he said, would work for improvement. He added that co-operation of contract physicians employed by the companies is of the utmost importance to the welfare of both employers and employees, in urging companies to take more interest in and give more assistance to corporation doctors.

W. L. Halford, vice-chairman of the Workmen's Compensation Board of Ontario, spoke on "Compensation", and A. E. Wold, safety engineer of the Backus-Brooks Co., gave an address on "Lost Time." W. C. Miller, chief sanitary inspector for Ontario, also delivered an address on matters connected with his department.

Splendid Record of Ontario Air Force

Captain Roy Maxwell, head of the Ontario Provincial Air Force, recently made public figures which show that since the 1st of May last the force has been responsible for a total of 11,500 flying hours, or, in other words, have flown approximately 850,000 air miles over the timber lands of Ontario. All flying records of past years have been shattered by this achievement, which shows how the force stood the test of one of the worst fire hazard years in the Province's history. One of the most gratifying features in connection with this record is the fact that it has been established without injury to a single member of the personnel of the air force or to a single passenger among those that it carried from time to time.

Only two stations of the many from which the fliers battled with the bush fires, remain open at the present time, namely, Fort Frances and Kenora. While no further hazards are anticipated, several small fires were spotted from a patrol out of Sudbury recently, and the service is taking no chances and is keeping a couple of stations open for a while yet. In most cases, however, the reconditioning program of the service is well under way, and most of the machines that were engaged on detection and suppression work are now at the Sault Ste. Marie base for refitting and overhauling in preparation for the 1930 season.

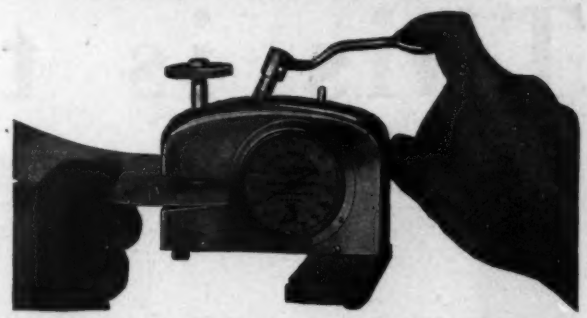
Alliance Starts Second Year Auspiciously

Alliance Paper Mills, Ltd., Toronto, consolidating Lincoln Pulp and Paper Co., Ritchie and Ramsay, Ltd., and Georgetown Coated Paper Mills, has now started on the second year of its existence. Accordingly, it is now possible to review the position, although, officials state, there were difficulties to be anticipated in the very nature of an amalgamation of this kind. For example, there was the matter of the organization of the sales staff, the merging of the New Toronto coating plant with the Georgetown coating plant, and various other preliminary work of similar character that presented itself. Moreover, there was a great deal of reconstruction work to be done as well as much replacement and renovation of existing mechanical equipment. It is stated that all the difficulties have been overcome in a satisfactory manner and the various plants have been brought to the desired point of operating efficiency. The past year's record has fully come up to expectations and the outlook for the second year is such as to inspire confidence.

Driving of piles has been completed and pouring of concrete footings has been started by the company which holds contracts for the erection of a $75,000 addition to the plant of the Canadian Paperboard Co., Ltd., Toronto. Plans by Kerry and Chace, Ltd., consulting engineers, call for a one-story addition, concrete and insulex-covered frame construction.

Recent advices from Kenora say that the Kenora Paper Mills' record for newsprint production on the two machines went by the board when the splendid record of 275.7 tons of newsprint was turned out, surpassing the last record run of 273.25 tons, which was made on September 17. The previous

ASHCROFT PAPER TESTER



A mechanical instrument for quickly determining the bursting strength of paper. It enables the buyer and user to make an accurate test of any kind of paper. The bursting strength is indicated on the dial in pounds per square inch.

Don't be misled by the usual "tear" test. Two samples of paper which "seem" alike may vary from 5 to 10 pounds in strength on the Ashcroft Paper Tester. Every printer and user of paper should have one.

Price—$40.00.

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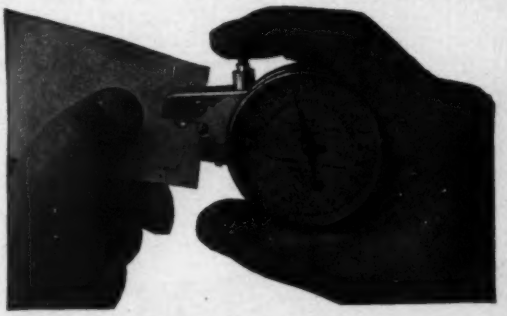
ASHCROFT PAPER THICKNESS GAUGE



For measuring the thickness of paper, cardboard, blotting paper, rubber, felt, cloth and other thin sheet materials. Widely used for many years among printers, paper manufacturers and dealers.

An accurate, precision instrument reading to thousandths of an inch. In testing a coated enamel paper, for instance, the difference between 80 lb., 90 lb. and 100 lb. stock is immediately apparent.

Price—$15.00 . . . Special discounts to Jobbers.

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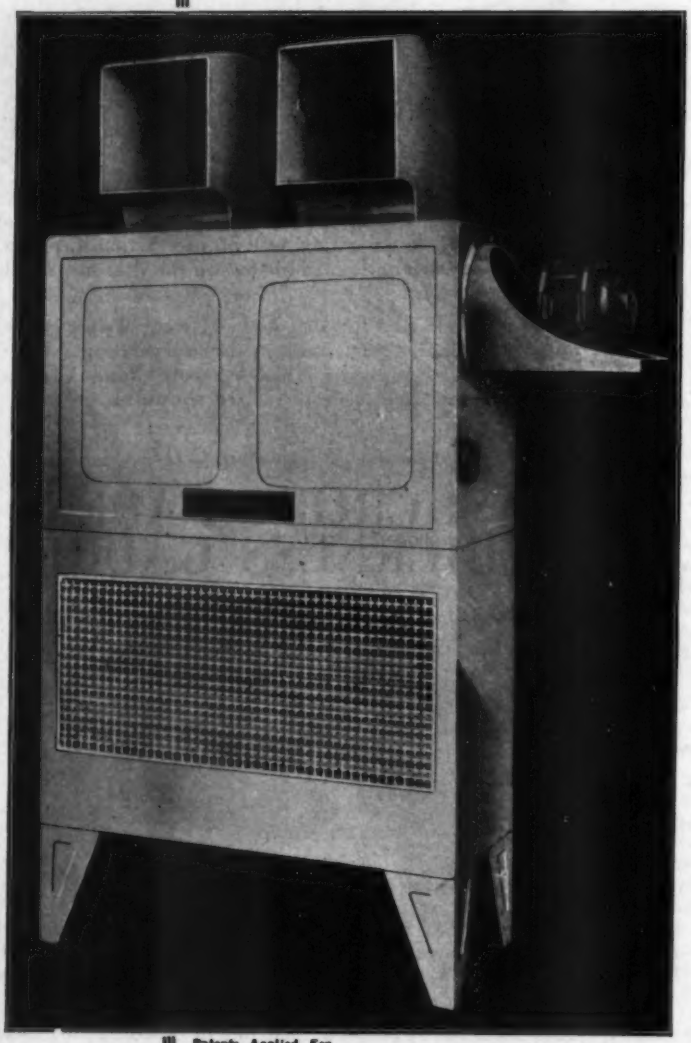
SINCE 1851

This is the new



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Wetboy

A unit heater that washes, heats and humidifies air

Since the advent of the unit heater there has been a real need for a unit that would wash and humidify—at a moderate price!

The Buffalo Wetboy offers you an ideal heater with the cleaning efficiency of a scrubber washer.

The Wetboy is simple—no pump—no outside mechanism, self contained, and easily cleaned.

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Of course, the heating coil used is non-corrosive light-weight, Universal Aerofin.

Buffalo Forge Company

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In Canada: CANADIAN BLOWER & FORGE CO., LTD., Kitchener, Ont.

"Buffalo"

Highboy, Lowboy and Wetboy Unit Heaters

record had been made in August, when 271 tons were produced in a 24-hour run. The figures reveal a steadily increasing production during the last two months, which can be attributed to certain improvements and also to the high standard of efficiency now prevailing at the mill.

The Don Valley Paper Co., Ltd., will shortly transfer its head office from its present quarters on King St., West, Toronto, to the new building that Provincial Paper, Ltd., has erected on University Ave., Toronto, and which will soon be ready for occupation.

It is rumored in circles usually well informed on such matters that Provincial Paper is contemplating entering the bond paper field, before long, in an extensive way.

◆ NEW BRUNSWICK ◆

The Edmundston Pulp and Paper School reopened classes on Monday, September 30, with H. J. Atkinson again as instructor-in-chief. This school was organized in October, 1928, and is now starting the second year of its existence, which promises to be a busy one. Of the 17 students who completed the work last year, 14 have again enrolled to continue their studies. New students to the number of 20 have registered, and inquiries from a few more have been received, so that the total enrollment should be well over 30.

Important Timber Deal Halted

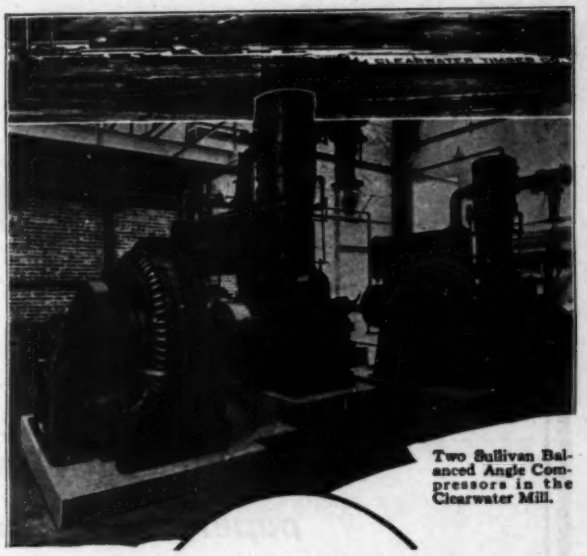
It is recognized that the halt in negotiations between International Paper Co. and the New Brunswick Railway Co. is of far-reaching importance in the province. The International interests have refused to continue negotiations for the immense timberland holdings of the railway company owing to existence of an issue of debenture stock in which the Canadian Pacific Railway is financially active, and which involves over $3,000,000.

International Paper demands complete assurance from claims which develop from this issue. The pulpwood which was to supply the new pulp mill to be erected at St. Leonard, N. B., was to have come from the lands now owned by the New Brunswick Railway Co. along the upper St. John River and its tributaries. Indications are that the project at St. Leonard will be interfered with by the controversy between the companies over the big land deal. Included in the Railway company's vast holdings are large tracts of pulpwood lands.

Roofing of the new pulp mill at Buly, N. B., which is being erected by Fraser Companies, and costing $1,250,000, has commenced. The structure is two stories high, 200 by 400 feet in dimension, with concrete foundations, steel frame and reinforced concrete construction. Work has also started on the digester house, which is 35 by 140 feet in dimensions.

◆ NOVA SCOTIA ◆

Frank Stanfield, of Stanfield's Ltd., Truro, is said to be at the back of a new enterprise which will build a plant in Queen's County for the production of rayon from wood fiber. It was announced sometime ago that Stanfield's might go into the rayon field, but apparently active steps have delayed until the present. Until this new departure, Stanfield's confined its activities to the manufacture of high grade woolen underwear. Operations of a rayon manufacturing unit would undoubtedly add still further to the strength of the company. In respect to the shortage of sulphite pulp, which is the raw material used in the manufacture of rayon, Stanfield's would be in an advantageous position, inasmuch as the Fraser companies are now completing a plant which will be devoted to the production of rayon-grade sulphite.



Two Sullivan Balanced Angle Compressors in the Clearwater Mill.

where Air earns profits in 10 ways—

makers of world-famous "wasteless lumber" use Balanced Angle Compressors

EIGHTY miles of lumber in eight hours! That is the capacity of the Clearwater Mill, of the Weyerhaeuser Lumber Company.

A trifle saved per thousand board feet, means a worthy dividend. Methods and machines are under rigid scrutiny. And air power by Balanced Angle Compressors is doing ten tasks.

Air controls seventy dry kilns, preparing new lumber for shipment in ten days. It pumps water, opens and closes boiler dampers, changes band saws, runs pneumatic tools.

Nineteen thousand sprinklers, and a fire alarm system, operated by air, protect the mill.

For the management knows that air power is clean, and flexible. They buy it and apply it scientifically. And—like leaders in every industry—Weyerhaeuser uses Balanced Angle Air Compressors.

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SULLIVAN MACHINERY COMPANY
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Over Fifty Years

Experience in the manufacturing of wires for American and Foreign paper makers and the ever increasing use of Appleton Wires testify to their quality.

Looms of our own design, wire drawn in our own plant to specifications derived from exhaustive research, and carefully trained operators make this high quality possible.

Appleton Wires

are good wires

APPLETON WIRE WORKS INC., APPLETON, WIS.

❖ MANITOBA ❖

Manitoba Paper's Pulpwood Supply Inadequate

The settlement of the natural resources controversy in regard to Manitoba would appear to be exerting an unfavorable influence upon the treatment being accorded the Manitoba Paper Co. in the matter of pulpwood reserves. The company in 1927 issued bonds to provide a mill with a productive capacity of 250 tons of newsprint per day and did so upon the explicit understanding that the Dominion Government would ensure to it a wood supply of 6,000,000 cords. The mill was constructed and the Dominion Government set aside a large area in the middle north of the province from which pulpwood areas were to be selected for the company. These selections were to proceed until the 6,000,000 cords were obtained, when the remaining parts of the area were to be released for commercial exploitation by other companies. In the intervening two years, the timber cruisers of the company and of the Government have gone over this area and it is now announced that the entire area set aside in 1927 holds only 2,516,243 cords of pulpwood.

The company has asked the Government to take the necessary action to increase the reserve supplies of wood, and while the Dominion Government is willing to do this, the Provincial Government appears to delay the final settlement until the control of these resources has passed definitely out of the hands of the Dominion and into the hands of the Provincial Government. An agreement in this regard has been arrived at and the necessary legislation to effect the transfer will be put through at the next session of Parliament.

If the Provincial Government insists upon delay, and it seems probable that it will, then the paper company will have to wait for at least one year for action, and in the meantime other private companies are becoming interested in newsprint development, such as the British syndicate which holds a priority permit for White Mud Falls on the Nelson River, and it may become increasingly difficult to do justice to the needs of the original company. The Dominion Government has not only suggested that immediate steps be taken to augment the supplies of the Manitoba Paper Co., but has set out definitely how this may be accomplished without injuring any other newsprint mill site within the province. As yet the province has declined to co-operate in the matter.

❖ BRITISH COLUMBIA ❖

Powell River Co. to Add Another Machine

As reported in these columns in September, the Powell River Co. and the Consolidated Mining and Smelting Co. both applied to the Provincial Government for the right to develop the water power of the Lois River. At the final hearing before the Water Board, on October 18th, the Consolidated Mining and Smelting Co. withdrew its application, and the rights will be awarded to the Powell River Co.

The company has agreed to start without delay a great papermaking metropolis 60 miles north of Vancouver. It will spend from $6,000,000 to $8,000,000 by way of providing the first unit of electric power under the new plans and the installation of another paper machine to make use of the additional power thus made available. The added output of paper will be 35,000 tons per annum.

To-day, Powell River mills use in the neighborhood of 50,000 hp. most of it electric energy generated from the fall of water from Powell Lake to the sea. Ten miles south of Powell Lake is Lois River, on which will be built a new power plant which eventually will be able to transmit 32,000 hp. to the mill over high-tension lines. About half of this total capacity is to be developed during the next year or two, so that from 14,000 to 15,000 hp. will be available for another paper machine and the necessary accessory machinery.

A. E. McMaster, general manager of Powell River Co., said his concern must make more paper or drop some of its

Grind calender rolls this better way

THAT Oakite grinding compound is an ideal coolant and lubricant for grinding steel calender rolls is being recognized by an increasing number of paper mill superintendents. The unusual efficiency of this material, even in localities where the water is hard, helps to produce a roll that is free from blemish. Its rust-proofing qualities prevent rusting of surfaces, if rolls must be left wet over night.

That is but one of the uses of Oakite materials in a paper mill. They are also used to great advantage in cleaning wires, screen plates, and sieve cloths, where their safe, effective action conserves time and effort, and assures thorough cleanliness. Another important use is in cleaning felts. Washed the Oakite way, felts are softer, more absorbent, and last longer.

Our nearby Service Man can give you specific data on the savings that Oakite cleaning effects. Write us and ask to have him call. No obligation.

Oakite Service Men, cleaning specialists, are located in the leading industrial centers of U. S. and Canada

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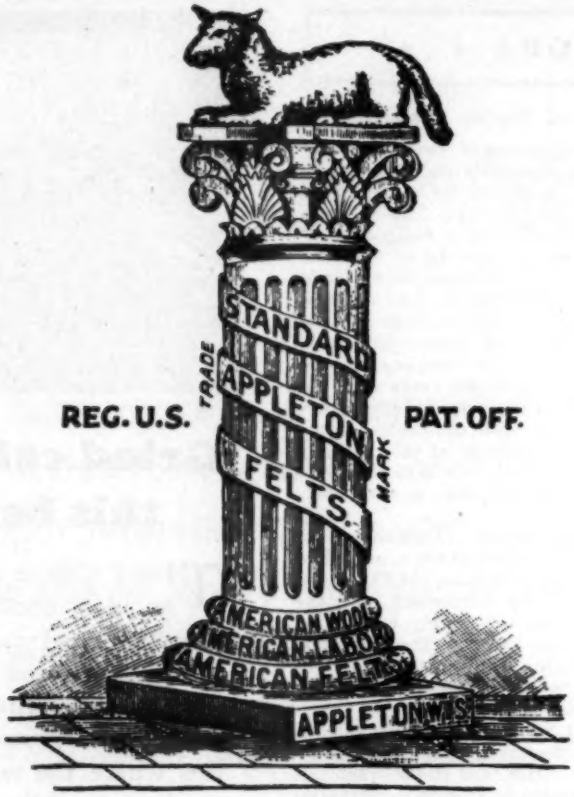
Industrial Cleaning Materials and Methods



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always your assurance of *Quality and Service*

Nothing but quality and service could result from the way Appleton Felts and Jackets are made. Only a high grade pure wool is used—manufactured into finished products under the most exacting plant conditions and accurate checking that any product can undergo. And, then back of the finished product are over 38 years experience and success in solving felt problems. This is an experience that assures you the best felt it is possible to manufacture.

Perhaps our experience with felt problems in other mills may be of interest to you.

APPLETON WOOLEN MILLS
Appleton, Wisconsin

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Felts and Jackets

markets. The first unit to be installed on Lois River, he said, would enable the output of the Powell River mill to be increased by 35,000 to 37,000 tons a year, or about 30 per cent. Fourteen thousand horsepower would be used, and while the total cost involved had not been definitely determined, it would run at least to $6,000,000, and possibly considerably more.

After a tour of investigation in eastern Canada and the United States, Mr. McMaster said he believed that the whole paper situation would show a great improvement in the next few years.

Port Mellon Mill Ready for Operation

The pulp and paper industry in British Columbia is growing steadily, and one of the most recent additions to the pulp and paper mills of the province is the Port Mellon plant, now owned by the Vancouver Kraft Co. The Port Mellon mill, while not the largest in the province, is unique in many respects. The first unit of this plant has now been completed at an estimated cost of $1,500,000.

The first attempt to build and operate a mill at Port Mellon was made some 20 years ago by the Howe Sound Pulp and Wood Co. No less than five concerns have since sought to operate this old mill before the Vancouver Kraft Co., its present owners, took it over. They soon found out that, though it produced a good grade of pulp, it was far too expensive and slow in operation for modern business needs, and they decided to close down and remodel the old plant after the newest pulp mill standards.

A sawmill with a capacity of 200,000 feet per 8-hour shift is now nearing completion. The sawmill is to be operated in conjunction with the pulp mill, a system that will ensure the most economical manufacture of pulp and lumber. A noteworthy feature of the new mill is that the whole of the log is to be used: the best of the log is sawed into lumber; the slabs are dumped onto a conveyor and carried to the pulp mill to be made into pulp; the bark, dust and other refuse are carried by another conveyor to the main boilers of the plant, where they provide fuel.

The mill will specialize in kraft paper, and for this type of paper practically any native British Columbia wood can be used. The capacity of this first unit, now practically completed, is 120 tons of kraft pulp per day.

Construction of a storage dam at Brennan Lake is to be undertaken by the British Columbia Pulp and Paper Co. The reservoir will have a capacity of 2,000,000,000 feet and will be used for developing additional power for the mill. The company manufactures bleached and easy-bleaching sulphite and the mill has a capacity of about 72,000 tons annually.

The entire Green Timbers area on the Pacific Highway near New Westminster will be replanted and permanently preserved as a forest for the benefit of future generations of British Columbians as part of a new province-wide scheme of reforestation, it has just been announced under the authority of Hon. F. P. Burden, British Columbia Minister of Lands. Having just secured from Ottawa control of the logged-off lands which formerly supported the Green Timber, the Government will make them into British Columbia's first forestry nursery, from which young trees will be transplanted to other logged-off areas all over the coast region, in an effort to make the forest crop perpetual.

An option is understood to have been purchased on the Bohler property at Kitsumkalum River close to Terrace, for use in connection with a pulp mill project. An option has also been taken on adjoining properties for the same purpose. This project, it is believed, is in connection with the proposed development of the Pellatt estate, which includes large timber limits in the Kalum Valley. Experts state that a pulp and paper mill would be a paying concern, if well managed, at this site. There is an abundance of timber on both the Kitsumkalum and Skeena rivers, and power could either be developed by the pulp mill owners, or purchased from Power Corporation of Canada, which, through its subsidiary, the Northern British Columbia Power Corporation, is now developing hydroelectric energy in this district.

SCOFIELD FELT CONDITIONER

The Scofield Felt Conditioner is a device designed to meet the needs of the paper industry. It is the result of years of concentrated study of the requirements. Its performance is guaranteed.

A dirty felt is a liability; a clean felt is an asset.

With the Scofield Conditioner you can keep your felts clean continuously. Dirty streaks and spots can be removed quickly and efficiently.

Many mills are using this method of felt conditioning. It is being used on machines making all grades of paper from tissues to boxboard.

Give us an opportunity to review your felt trouble.

We will gladly send you complete particulars upon request.

GILBERT J. SCOFIELD COMPANY, INC.

408 No. Pearl St.
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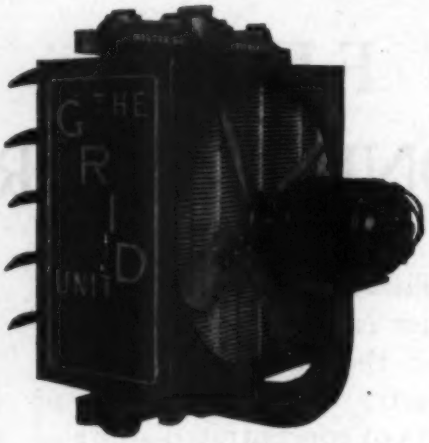
Grid All-Cast Radiation



A Product of the D. J. Murray Mfg. Co. Wausau, Wis.

A new principle in Unit Heater design.

Great strength in all its features combined with light weight.

Compact — Efficient — Non-corrosive.

Suitable for high or low pressures.

Equally applicable to heating or cooling problems.

Designed for Steam — Water — Brine — Ammonia.

Used not only for Unit Heaters and Coolers, but also for

Blast Radiation
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Built in a variety of sizes.

Fully tested and guaranteed.

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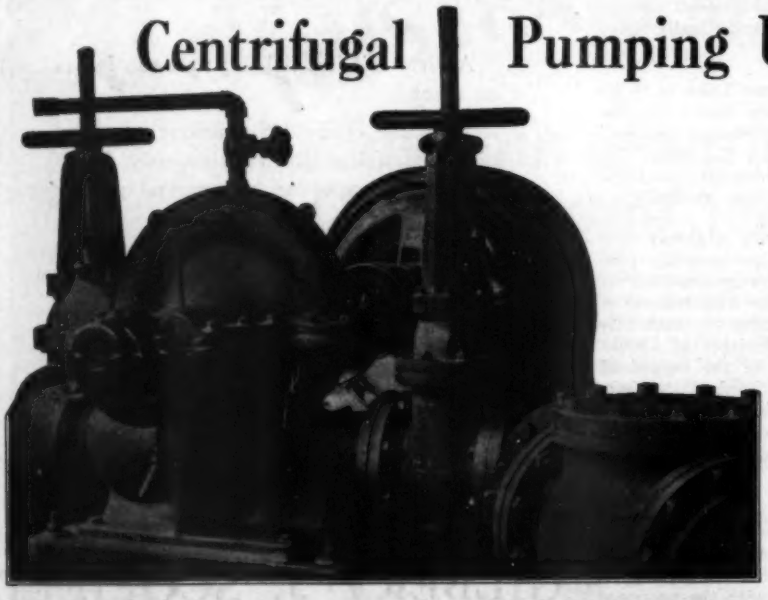
Centrifugal Pumping Units



Which Are Suitable For Paper Mills

There are different kinds of pumps for different uses in Paper Mills. You don't have to buy an experimental pump if it has an Allis-Chalmers name-plate. The right pump for each particular service has been proven by many applications and can be furnished from a complete line.

Write for Bulletin 1632 H.

ALLIS-CHALMERS

MILWAUKEE, WIS. U. S. A.

ENGLAND

Monthly Report on the Paper Industry

The papermaking industry is more favorably placed with regard to employment than most of the other important industries in the country. The unemployment figure is estimated at 4 per cent at present. Business is fairly good but the orders are not evenly distributed. Newsprint manufacturers are well booked up with contracts for sometime ahead; but selling figures are at a low level, and the price of pulp is harder than it was at the time existing newsprint price levels were fixed.

It is anticipated in some quarters that Canada will make a bid for a bigger share of the pulp sales in this country, especially in view of the policy of control of the production and sale of mechanical wood pulp by Norway, Sweden, and Finland. During the last three years, the British consumption of Scandinavian pulp has increased considerably, while the imports of wet mechanical from Canada have been reduced to a practically negligible figure.

Difficulty in regard to pulp prices is also being experienced in the woodfree section. Although the costs of producing woodfree papers are higher than they were a year ago, the selling prices are still at the level fixed in conference when producing conditions were more favorable. Continental competition is one factor which has prevented the raising of prices.

Things are very active in the esparto section. Machines of bigger calibre are being installed, and the demand continues to justify the increase in machinery and plant. It is estimated that the consumption of esparto grass will exceed last year's record by some 20,000 tons, and this in spite of the fact that a large diversion has been made from the African grasses to the dearer Spanish varieties, and in spite also of the increase of one farthing per pound. Although difficulties in the supply of materials still exist, most of the mills are working to full capacity.

Another serious fire outbreak occurred in a paper mill recently, this time in the North of England; the Skyreholme Paper Mill, Upper Wharfedale, Yorkshire, being damaged to the extent of several thousand pounds.

Preparations are well forward for the construction of two new newsprint mills, which together will have a capacity of about 100,000 tons per year. As these two mills are both linked up with publishing concerns which will require in a very short time the whole of their output, the greater part of which is now being supplied from outside sources, a certain amount of manufactured newsprint will be released for general consumption. It has been estimated that the present capacity of British mills would have to be increased at least fifty per cent before they could possibly supply the whole of the needs of the home market.

The Prince of Wales paid an early morning visit recently to the famous paper mills at Laverstoke in Hampshire where the paper for Bank of England notes is made. The Prince motored to the mills after breakfast, arriving at nine o'clock, and spent an hour examining the various processes. Colonel Wyndham Portal, with whom the Prince was staying at Kingsclere House near Newbury is the head of the firm of Portals, Ltd. papermakers, which since 1719 has made the paper for all the notes issued by the Bank of England, and by many other countries.

Esparto Papermakers Organize

The first section of the trade to indulge in co-operative advertising was that interested in writing papers for commercial and private use. The esparto makers have not followed this example, for they have combined and formed what is known as the Esparto Paper Marketing Board, the object of which is to make known to possible users the value of esparto papers for ordinary writing and printing purposes,

RYERSON

Immediate Shipment from Stock

Bars, Shapes, Structurals, Rails, Plates, Sheets, Rivets, Bolts, Nails, Wire, Chain, Turnbuckles, Shafting, Boiler Tubes, Boiler Fittings, Corrugated Sheets, Concrete Reinforcing, Welding Rods, Babbitt Metal, Tool Steel, Bar Iron, Refined Iron, Floor Plates, Safety Treads, Small Tools, Machine Tools, etc.

Write for the Journal and Stock List—the "key" to Immediate Steel.

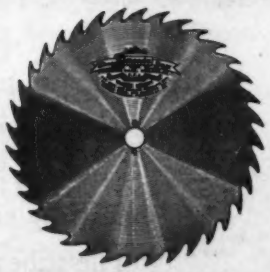
JOSEPH T. RYERSON & SON INC.

Chicago Milwaukee Buffalo St. Louis New York Cincinnati Boston Detroit

STEEL

SIMONDS

Circular Saws and Machine Knives



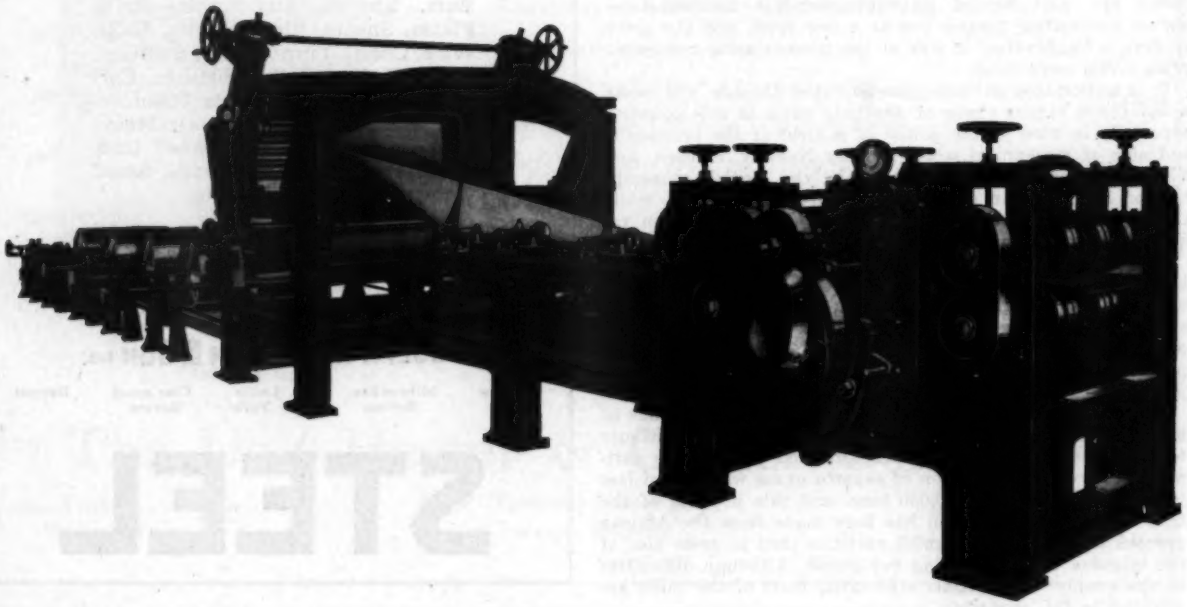
For pulp and paper mills it is economy to use Simonds Saws and Barker, Chipper and Paper Cutter Knives because they hold their edge longer and cut faster. They are backed by a near century of experience. Write for catalogue and prices.

Simonds Saw and Steel Co.

Established 1832
Fitchburg, Mass.

Boston Chicago

PAPER BAG MACHINERY



Multi Wall Tuber

For production of sewn bags, with intucked sides, with one up to five walls in thickness.

Modern in construction. All bearings of ball or roller type, entirely enclosed.

The tubes made on the Multi Wall Tuber meet the severest tests of perfection and production.

Write for further information—no obligation.

The Smith & Winchester Mfg. Co.

ESTABLISHED 1828

South Windham, Conn.

Paper Machinery—Paper Cutters—Paper Bag Machinery

and more particularly for the printing of books of an educational character. The chairman of this board is A. Mackenzie Livingstone, who represents several important mills making esparto papers.

The first move in the campaign is the addressing of a letter to all the county educational committees, drawing attention to the superiority of papers made from esparto. The paper is described as Britain's most exclusive and economical paper.

British Industries Fair

The 1930 British Industries Fair will open February 17, 1930 and will continue until February 28th. Again it will be held simultaneously in London and Birmingham. The Birmingham section at Castle Bromwich will cover hardware, machinery, architectural and ornamental metal work, automotive products, etc. Practically every other industry will be represented in the London section.

The London section will be accommodated for the first time in its new home, at Olympia, where exhibitions of various kinds are regularly held throughout the year and where the heating, catering and other arrangements for the convenience of buyers and visitors are excellent. The fair buildings are compact in arrangement so as to bring the sections in close touch with one another, and three main entrances will facilitate access to the exhibition as a whole.

Additions and improvements will also be found in the Birmingham section of the fair. A new building will be available comprising a dining room specially for exhibitors, another for trade buyers, a large conference hall and a series of private dining rooms for the use of trade associations and professional societies. Comfortable lounges will also be provided for the convenience of exhibitors and their guests.

Record bookings of accommodation are reported for the 1930 fair, nearly the whole of the accommodation, including extensions, having been reserved six months in advance of the opening date. The extensions include accommodation for the engineering, gas, general hardware, building materials and electricity section of the fair.

As in former years, arrangements have been made for the granting of gratis visas on the passports of bona fide foreign buyers visiting the fair.

❖ MICHIGAN ❖

Improvements at Bryant Paper Co.

The first unit of the Bryant Paper Company's plant which was erected in 1895, the year the company was organized, is being removed to make way for a new structure which will house a central finishing department. The two first fourdrinier machines installed by the company have been sold and moved from the plant.

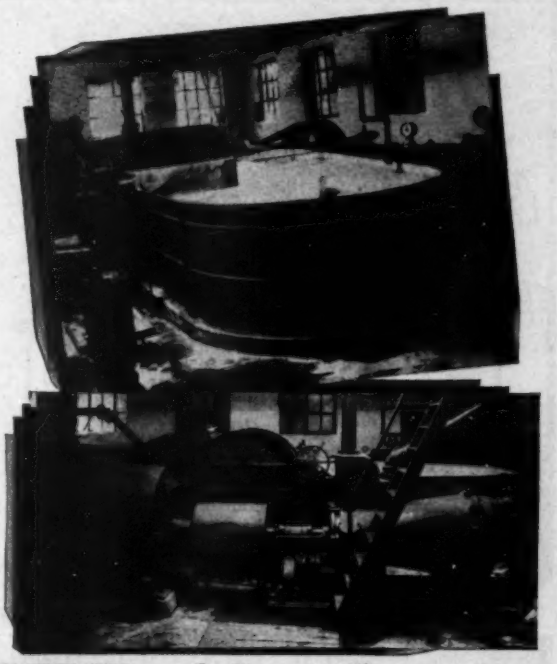
The new finishing room will be 280x68 feet, one story high and of brick, steel and reinforced concrete construction. This will center all the finishing activities under one roof and at the same time eliminate three finishing rooms.

Another improvement being made by the company is the rebuilding of the No. 10 machine in the Milham Division. The machine is to be transformed into a straight fourdrinier, completely electrified.

The Cost and Technical Associations

The Cost and Technical Associations have held meetings for a good number of years. At the meetings two papers are usually read; one given by a cost man, and another by a technical man. After these papers are given, the subject is discussed from both the cost point of view and the technical point of view. These meetings are usually held the fourth Wednesday of the month at the Columbia Hotel, Kalamazoo.

At the October 23rd meeting John C. Wood spoke on "The Cost Man as a Factor in Production, and Quality Control" and George Hendricks, Bryant Paper Company spoke on the



P.H.Glatfelter Switches to High Speed Beaters

Let no man tell you that the advantages of Mid-West Hi-Speed Beaters are not noticeable. The mills that have them report differently.

At Glatfelter Mill

Take the P. H. Glatfelter mill at Spring Grove, Pa., makers of book, bond, writing and specialties of the better grade. They have one Mid-West in operation and three more on order—all four to replace eight old beaters when installed.

Handling 3000 lb. Furnishes on 65 H.P.

The one now "in" is handling 3,000 lb. furnishes on 65 H.P.—which performance led directly to the order for the other three.

Why worry along with old style hollands you otherwise up-and-comin' Superintendents? Better check up.

Glad to name other mills now operating Mid-West Hi-Speed Beaters—then leave the rest to you.

THE MID-WEST MACHINE CO.
DAYTON, OHIO

MID-WEST

ALLIGATOR

TRADE MARK REG. U.S. PAT. OFFICE

STEEL BELT LACING

The famous name in belt lacing

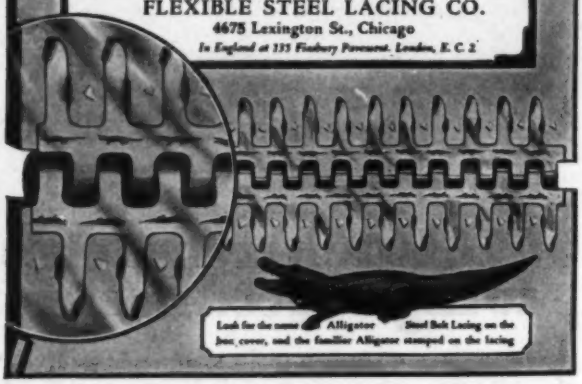
For nearly twenty years, the name Alligator Steel Belt Lacing has meant —extreme strength; serviceability; easy, rapid application. It has meant a simple, smooth, separable joint; protection of belt ends in a clinched grip of steel; uniformity of steel used and of finished product. Every point desirable. Genuine Alligator Steel Belt Lacing has them all.

Made only in America. Sole Manufacturers

FLEXIBLE STEEL LACING CO.

4675 Lexington St., Chicago

In England at 133 Finsbury Pavement, London, E. C. 2



MARIS DOUBLE BEAM ELECTRIC CRANE

That Significant Second Order

Nearly 70% of Maris business comes in the form of repeat orders, AN ALL SUFFICIENT CLAIM OF SATISFACTORY SERVICE.

Send for Maris Material Handling Data Bulletins

MARIS Overhead Electric Cranes
MARIS Hand Cranes, All Types
MARIS Simplified Electric Hoist
MARIS Monorail Systems, Hand and Electric
MARIS Self-aligning Monorail Trolleys
MARIS Self-lubricating Chain Hoist

MARIS BROTHERS, Inc.

5530 Grays Ave. Philadelphia, Pa.

Free-moving rods gather no friction

DANIELS P.P.P.

Packing friction slows down the rod and wastes power.

P.P.P. Rod Packing won't brake the rod because its wedges slide with the steam pressures.

Give us details of your packing requirements and we will send without cost, enough P.P.P. to prove its claim as Perfect Piston Packing.

QUAKER CITY RUBBER CO.

WISSINOMING, PHILADELPHIA

Branches: New York Chicago Pittsburgh San Francisco

POWER PLANT PIPING

We are fully equipped to supply fabricated materials and to install complete piping systems for Electric Power Stations, Blast Furnaces, Steel Mills, Coke Works, Paper Mills and Industrial Plants of every description—backed by an experience of almost a quarter century.

Pittsburgh Piping & Equipment Co.

PITTSBURGH, PA.

STEEL PLATE CONSTRUCTION

Riveted and Welded

Specialists in PAPER DIGESTERS and Heavy Plate Work

RITER-CONLEY COMPANY

Pittsburgh, Pa.

THE JOHNSON FRICTION CLUTCH

Single Clutch with Pulley

As Used On An

EMBOSSING Machine

in the

PAPER INDUSTRY

A #11 **JOHNSON** Single Friction Clutch is used on the main drive and is operated by hand lever.

WRITE FOR CATALOG "P.I.-11"

Courtesy—John Waldron Corp. New Brunswick, New Jersey.

THE CARLYLE JOHNSON MACHINE CO. MANCHESTER CONN.

subject "Ways by Which the Technical Department Can Help the Purchasing Department." At the November meeting, which is to be held on the 27th, the subject "Cost vs. Shrinkages" will be discussed. The December meeting will be a joint meeting with the Michigan Division of the American Pulp and Paper Mill Superintendents Association and will be held on December 19th. At this meeting the subjects "Merits of Various Types of Beater Bars" and "What Control Should the Chemist Have Over Beater Furnish" will be discussed. At the January meeting the annual election of officers will be held.

The new power equipment installed some months ago by the Kalamazoo Vegetable Parchment Company is proving to be all that the Management expected and they are heartily pleased with the savings effected. Two large boilers are generating steam for both Mill No. 1 and Mill No. 2. The power plant at Mill No. 1 is completely shut down but held in reserve. The new electric equipment has been installed in Mill No. 1 to run both machines by motors.

Paper Technologists Club

The Paper Technologists Club, Kalamazoo, has laid out the following interesting schedule of meetings and subjects to be discussed during the coming year:

November 13—"Drawing on Raw Materials for Manufacturing Process" and "Developments in Beater Design."

December 19—"Merits of Various Types of Beater Bars" and "What Control Should the Chemist Have Over Beater Furnish." This will be a joint meeting with the Michigan Division of the American Pulp and Paper Mill Superintendents Association and the Cost and Technologists Club.

January 8—"Hydration and Oxycellulose" and "Technical Control of Beating."

February 12—"An Effective Laboratory Procedure for Matching Colors" and "The Beater vs. the Jordan."

March 12—"Variables on Paper Machine Wet End" and "What Authority Should the Chemist Have Over Inspection of Finished Paper."

April 9—"Variables in Drying Paper", "Paper Specifications, What They Mean and Who Should Make Them", and "Do Testing Stations Pay in Mill Control Work."

May 7—Third Annual Interstate meeting with the Cost and Technical Association.

June 11—"Casein vs. Starch in Coating", "pH Control in Preparation and Applications of Coating Mill Color Solutions" and "Analytical Tests for Coated Paper."

July 9—"Specially Treated Papers", "The Chemist and Customer Complaints" and "Future of Technical Men in the Paper Industry."

August 13—Election of Officers—Question Box.

A paper merger of importance in Southwestern Michigan jobbing circles is announced in the amalgamation of the Johnson Paper and Supply Company, Kalamazoo, and the Lockway-Stouck Paper Company, Benton Harbor. The new concern will operate sales and stock warehouses in both cities and no change in the personnel is contemplated. John D. Johnson, founder of the Johnson Paper and Supply Company, retains his interest in the new corporation and will be active in the operation of the Kalamazoo unit.

Joseph Worrall, millwright at the Allied Paper Mills, Kalamazoo, was injured recently when a rack holding some large pipes gave way, striking him on the head.

Michigan Superintendents Elect Officers

The Michigan Division of the American Pulp and Paper Mill Superintendents Association held its annual election of officers October 17th at the Park-American Hotel, Kalamazoo. The following were elected to serve as officers for the ensuing year: Chairman, William H. Seivert, Michigan Carton Company; first vice chairman, Walter Crawford, Sutherland Paper Company; second vice chairman, Otto Fisher,

Felts That Live To A "Ripe Old Age"

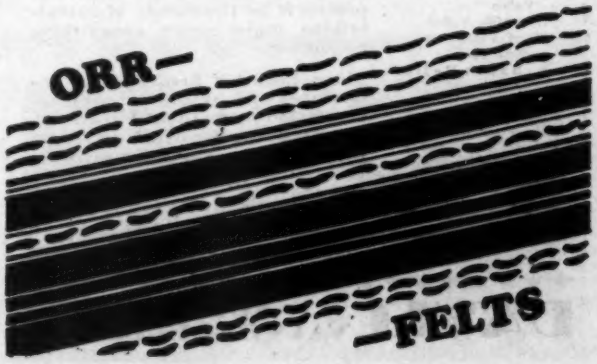
Any felt that will last several days longer than the general run of felts saves a bit of expense worth consideration. And in the course of the year's production the saving becomes a factor of prime importance, — for money saved is profit made. . . .

Orr Felts, on a test with competing makes, averaged nine days longer service. Figure nine days more to the felt on your year's run, cut the figures in half if you will. Either way, the saving is important. Then call for an Orr representative.

A complete line — an Orr for every machine requirement

Orr Felt & Blanket Co.

Piqua, Ohio



THE DRAPER FELT

Unexcelled for strength, openness, resiliency, and general running qualities. Made to meet the most exacting conditions on all types of machines and all kinds of papers. Only one grade and that the highest.

Made by

DRAPER BROTHERS COMPANY

CANTON, MASS.

Woolen Manufacturers Since 1856

REPRESENTATIVES

L. H. BREYFOGLE, Kalamazoo, Mich. INTERNATIONAL TRADING CO., Philadelphia, Pa.

PACIFIC SALES COMPANY, Security Bldg., Portland, Ore.

REGULATE PRESSURES

TO SUIT YOUR PLANT NEEDS

When the boiler pressure is too high there is a Davis Pressure Regulator at your service to automatically maintain any lower pressure that efficient operating conditions may require.

Try this well proven valve the next time you have a problem in automatic pressure regulation. Its simple design, based on the principle of the balance scale (pressure balanced by counter-weights) insures accurate regulation and years of dependable service, without maintenance cost. Time has proven it in thousands of installations under every conceivable condition.

Since industry first became acquainted with automatic pressure regulation more than 50 years ago the Davis Regulator has served its purpose well to the great satisfaction of innumerable engineers.

Balanced Valve
Stop and Check Valve
Butterfly Valve
Float Valve
Steam Trap
Exhaust Relief Valve
Float Box with Control Valve
Back Pressure Valve
Non-Return Valve

G. M. DAVIS
REGULATOR COMPANY
414 Milwaukee Ave. Chicago, Ill.

DAVIS AUTOMATIC VALVE SPECIALTIES

PI-11-Gray

THE GREATER SAFETY OF

POWELL VALVES

Fig. 478
"Pilot" Gate Valve

IT is mainly the reinforcement of all portions of Powell Valves subject to wear, the rigid inspection during process, and the final testing of every Powell Valve that accounts for their greater safety.

Each Powell Valve, before it leaves the plant, is carefully inspected and accurately tested to specified limits in order to insure safety under abnormal working conditions.

THE WM. POWELL CO.

2525 SPRING GROVE AVE. CINCINNATI, OHIO

Bryant Paper Company; third vice chairman, John Weimer, Lee Paper Company, Vicksburg. George H. Poutain, Bryant Paper Company, was re-elected secretary-treasurer.

The directors of the Sutherland Paper Company, Kalamazoo, have declared a quarterly dividend of thirty cents a share to stockholders of record October 21. The statement issued by L. W. Sutherland, president, shows earnings for the quarter ended September 30, of $155,599.66. This is equivalent after reserve for federal taxes, to 45 cents a share on the 300,000 shares of common stock issued and outstanding, which shows an increase over earnings for the second quarter.

❖ OHIO ❖

Miami Valley Supers Meet at Franklin

The Miami Valley Division of The American Pulp & Paper Mill Superintendents Association enjoyed a dinner meeting Saturday, October 26, at the Hamilton Inn, Franklin, Ohio. Thirty-six members were registered.

H. T. Randall, assistant mill manager of The Champion Coated Paper Company presided. He gave an interesting account of a meeting of the National Executive Committee meeting held in Washington, D. C., on October 20. The purpose of a new committee was explained, "The Committee of Standards and Research." He urged the co-operation of individual members so that the reports which will be sent out to members from time to time will represent actual conditions and not the opinion or results of a few mills from which reports might be received.

H. O. Bing of the Paper & Textile Machinery Company gave an interesting talk on their newly developed paper machine. He told of the first attempts, dating back to 1914, when Mr. Millspaugh installed the first experimental machine in one of the mills of the International Paper Company. The outlook was bright, he stated, but was at the beginning of the war, and like all other industries the paper industry jumped in leaps and bounds and the tremendous business compelled them to discontinue experiments temporarily.

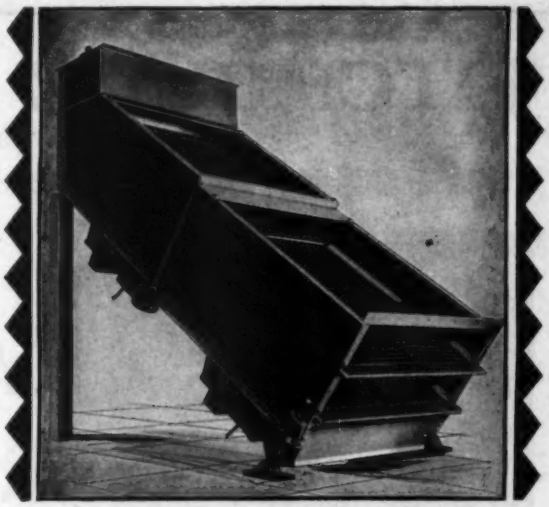
In 1921 the work was again taken up in a new location and since then developments have been satisfactory. The present machine is an evolution of the suction roll. Mr. Millspaugh, for many years, carried the idea of forming a sheet by vacuum and planned to apply the principle in a practical way. About four years ago, he installed a small beater and two vacuum forming mills and a suction press in a room next to the power plant in Sandusky. By this it was thought the mill managers and mill officials could see possibilities ahead and thus convince them the development was practical. Several papermakers investigated the merits thoroughly, but were not exactly satisfied because they saw only the wet sheet. They wanted to see the sheet dried and calendered before they were willing to invest any money in it.

It was found that the only practical thing to do was to have their own mill. On this machine they could experiment and there would be nothing to hinder further improvements. The mill consists of complete papermaking machinery and many new ideas have been incorporated.

To demonstrate the machine, paper manufacturers send in the material they need and make the paper themselves. Many grades have been run, some samples of which Mr. Bing displayed, and which includes kraft, asbestos, boards, etc. Two machines have been sold to date, one for making a kraft sheet and the other an asbestos sheet.

The next meeting of the Miami Valley Division will be held at the Hamilton, Ohio, Y. M. C. A., November 30.

Palmer-Bee Company, Detroit, announces the appointment of Geo. M. Demorest as district representative for Pittsburgh and vicinity. His representation will cover Palmer-Bee's complete line of manufactured products, including conveyors, speed reducers, flexible couplings, I-beam trolleys and switches and complete coal and ash handling systems.



Hum-mer Electric
CHIP SCREEN

Thorough removal of sawdust and fine particles!
Small floor space required!
Low power consumption!
Immense capacity!
Fully adjustable screening angle and vibration!
No lubrication!
No destructive shaking of supports or buildings!
No belts or pulleys!
Trouble-free operation!

These are the features which make the Wood Chip Hum-mer a profitable investment for pulp and paper mills!

Write for Catalogue 54-P

The W. S. Tyler Company
Cleveland, Ohio

TYLER
FOURDRINIER
CYLINDER
CORDUROY
WIRES

FITCHBURG DUCK MILLS

ESTABLISHED 1844

414 Duck Mill Road, FITCHBURG, MASS.

Manufacturers of

TRIUNE and MULTIPLE PLY

CANVAS DRYER FELTS

← { OUR NEW 300-INCH LOOM WHICH IS MAKING A DRYER FELT 288 INCHES IN WIDTH }

Fine Faced "English Woven" Felts for Fine Papers in Two, Three, Four, Five and Six Ply 60 Inches to 288 Inches in Width.

ABSOLUTELY NO FELT MARKS IN PAPER

TRIUNE Three Ply Felts for extra long service and large production

Pickles' Patent Automatic Steam Regulator FOR Paper Making Machines

Which absolutely control the drying of the sheet. Installed on sixty days' trial

W. F. PICKLES Buckland, Conn.

"For Better Service" use the HOLYOKE wire

Decreases Cost Increases Production

HOLYOKE WIRE CLOTH CO.

Manufacturers of

Fine Fourdrinier Wires, Cylinder Covers and Dandy Rolls

Water Marks A Specialty

HOLYOKE MASSACHUSETTS

MERRIMAC CHEMICAL COMPANY

148 STATE ST.

BOSTON, MASS.

COMMERCIAL ALUM — CMC — IRON FREE ALUM

ARM-O-LITE

A New and truly wonderful Felt Washing Compound indorsed by some of the best Paper Mills, who are steady users. ARM-O-LITE washes felts cleaner and quicker, leaves them soft and pliable, prolonging the life of the felt. We guarantee it. Let us tell you about ARM-O-LITE Felt Washing Compound.

ARMSTRONG CHEMICAL CO., INC.

Manufacturers

East Syracuse, N. Y.

CLEMENTS-WHITE TRADING CO.
HOLYOKE, MASS.
Exclusive New England Representatives

◆ NEW ENGLAND ◆

Paper Users' Standardization Bureau Meets

One hundred and twenty-five executives representing large business houses and industries of Boston attended the Second Annual Conference of the Paper Users' Standardization Bureau at the Hotel Statler, Boston, October 22. Those present were guests of the Arnold-Roberts Co.; Carter, Rice & Co. Corp.; John Carter & Co.; and Knight, Allen & Clark, Inc., paper houses that represent the American Writing Paper Co. in Boston.

Robert C. Fay, director of the Bureau, in opening the meeting gave a report of the progress of paper standardization since the meeting last year, as indicated by the Paper Standardization Conference held in Washington at the request of the Bureau of Standards of the Department of Commerce. At this meeting thirteen major industries were represented. Papers were read indicating their need for paper standards. Committees were formed and it is likely that the Government will publish paper standards within another year. These standards will apply to the following papers: blotter, bonds, book, bristols, index bristols, postcard stock, coated cover, envelopes, ledgers, mimeographs, offset, manifold and safety body stock.

Miss Helen U. Keily, Scientific Director of the American Writing Paper Co. who spent the summer abroad, conducted the afternoon session and reviewed European manufacturing processes, noting the various grades of raw products used in making paper, the testing of raw products, the testing of paper manufacturing processes and the durability of paper. She showed a piece of paper from the Fabriano mill, established in that town in Italy in 1537, where all the paper is handmade. The paper exhibited contained a large watermark of a man's head. In this mill there is an elaborate watermark department, in which the designs are cut out with stilettos.

After the dinner, moving pictures demonstrating a paper laboratory and the manufacture of fine paper were thrown on the screen.

Mr. Fay conducted the evening session, discussing the "Idea File of Direct Mail Papers," the simplified method of standardizing size and paper for advertising purposes. Plans were outlined to make studies of the papers used in business. The results of three years' research on the part of the Paper Users' Standardization Bureau were cited, in which were shown the large number of grades of paper in general use and how they can be reduced. The value of using definite laboratory tests as standards for paper specifications was emphasized.

John A. Owen, Assistant Director of the Bureau, explained the automatic standardization file.

William H. Greenleaf, manager of sales promotion for Carter's Ink Co., Boston, emphasized the need of standardization in relation to carbon papers.

Paper Displays at Exposition

Three companies manufacturing paper showed displays at the annual exposition of the Associated Industries of Massachusetts at the Copley-Plaza Hotel, Boston, October 21 to 23.

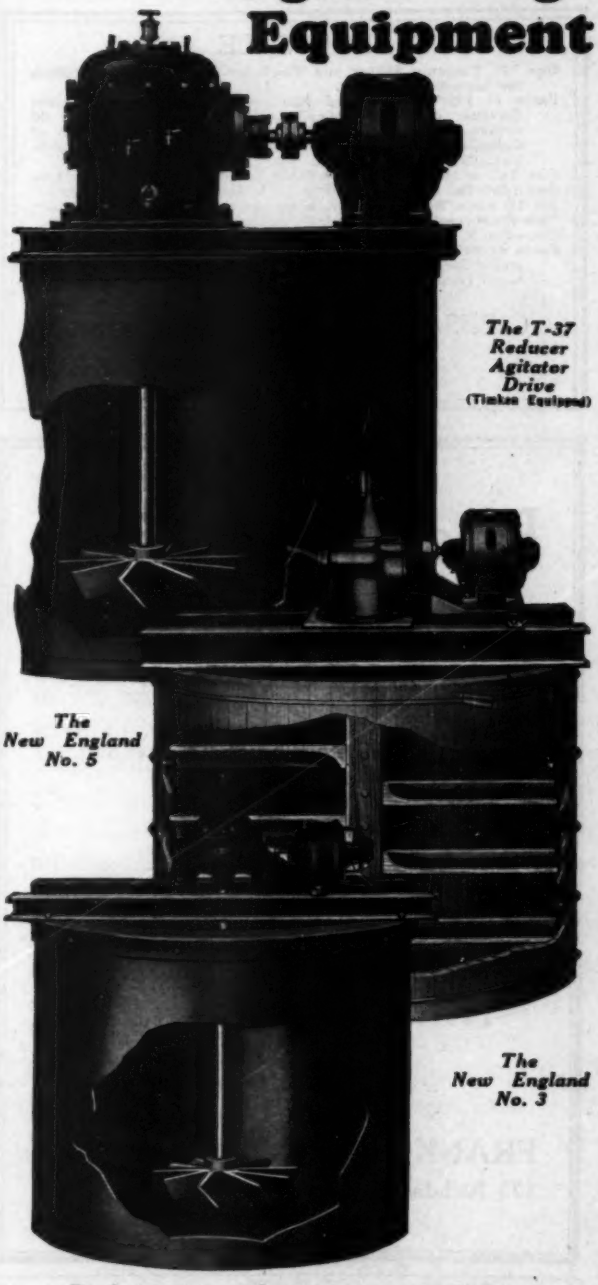
The American Writing Paper Co., Holyoke, Mass., demonstrated the Complete Standardization Service, illustrating how to make studies of the problems of paper users. The exhibit was in charge of John A. Owen, assistant director of the Paper Users' Standardization Bureau.

The Strathmore Paper Co., Mittineague, Mass., showed its lines of paper for printing and stationery. A feature of the exhibit was envelopes to match every item of paper made by this company. Sheldon Bradley, sales promotion manager, was in charge.

Tileston & Hollingsworth, Boston, displayed both old-fashioned paper and modern papers made at their plant, also featured colors in broadsides. Three Crinoline Girls, Mrs. Helen Henderson, Miss Doris Hodges, and Miss Martha Cooper, took part in the display, the first two in old-

for fillers—sizes—colors use

New England Agitating Equipment



Ready to put to work—strong rugged units designed to operate with maximum efficiency and economy. Send for complete details and specifications.

The New England Tank & Tower Co.
Everett, Mass.
30 Church St., New York

FOR SALE

One 72" Cameron Slitter and Rewinder Type 10; A1 condition for immediate delivery.

Parts of 120" Trim Board Machine. Four 10 plate Packer Screens; complete six cylinder Wet End; Dryer Unit 36 dryers, 48" diameter x 128" face; two Farrell Stacks of Calenders—one 7 and one 9 Roll, 126" face. Good condition. Can be had at once.

One 14" x 16" Brownell Variable Speed Engine ready to run.

One 1800 lb. Dowingtown Iron Tub Beater. Practically new.

Six 12 plate Beloit Screens, complete and in good condition.

Two Sturtevant Blower Systems—sizes 9 and 12—complete.

One—No. 2 Lannoye Pulper. Prompt delivery. In fine condition.

Parts of 80" trim Paper Machine—14—36" diam. Dryers; Calender Stack; Reel; Moore & White Double Drum Rewinder. Good condition.

Send us your inquiries

GIBBS-BROWER COMPANY, Inc.

Paper and Pulp Mill Brokers

261 Broadway, New York City

OUR MOTTO—"Service First"

Paper Mill Machinery

One No. 2 Bird Screen

Two Walpole Screens used only two years

One 156" Hamblet Duplex Cutter and Layboy, used very little

One 72" Kidder Slitter

One 130" M. & W. four drum Winder

One 134" P. & J. Uniform Speed Reel

One 76" S. & W. Under cut cutter

Two 69" S. & W. Under cut cutters

For Sale By:

FRANK H. DAVIS COMPANY

175 Richdale Avenue, CAMBRIDGE, MASS.

FOR SALE—Process for bleaching ground wood. Guaranteed strength increase. Cost of chemicals not to exceed $2.00 per ton. Samples furnished or demonstration made to anyone interested. Seneca Chemical Co., 4054 Argyle St., Chicago, Ill.

FOR SALE—Impco tailing screen in excellent condition. Unusual offer. Address Box 167, The Paper Industry.

WANTED—Engineering draftsman with experience in pulp and paper mill equipment layout as well as structural steel and reinforced concrete design. Give details of past experience with names of employers, also ago, birth place, education, religion, and salary expected. Address Box 168, The Paper Industry.

WANTED—Salesman to sell exceptionally high quality leather belting to paper and other mills in northeastern United States. Applicant must have first hand knowledge of paper mill machinery and possess sales ability decidedly above the average. Give references and state age, education, experience and salary expected. Address Box 170, The Paper Industry.

Lessons in Paper Making

By Harry Williamson

One of the greatest funds of information on paper making ever published for the mill man.

Part I contains the first twelve lessons and two separate articles—A Problem in Head Box Control and The Degree of Hydration.

Part II contains fourteen lessons and one separate article—Safety Practice in Machine Room. Price 50¢ each.

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fashioned costume and the third in modern dress. A new sample book, containing all the papers made by the company, was a prominent feature. The exhibit was in charge of A. V. Howland, vice-president and assistant treasurer, Howard Wallingford, assistant to Mr. Howland, Charles S. Trefry, sales manager for New England, and Marvin Campbell.

A. W. P. Co. Increases Earnings

Maintenance of the consistent increases in earnings that have characterized the record of the American Writing Paper Company since its reorganization in 1927 is reflected in the company's financial statement for the first nine months of 1929, released today. The statement shows an increase in earnings for the nine months ended September 30, 1929 of 20 per cent as compared with the same period of 1928.

The net earnings for the first nine months of 1929 after deducting Federal taxes, were $293,314.14, and for the first nine months of 1928, $241,839.70. An interesting feature of the company's record is that earnings for the nine months ended September 30, 1929 exceeded those of the entire year 1928, when profits totaled $277,993.81 after Federal taxes.

Commenting upon the statement, Sidney L. Willson, president of the company, said:

"The dividend obligations on the preferred stock of $3.00 per share for the year 1929 amount to $270,000 for the nine months represented by this statement, $202,500, leaving a surplus balance for the nine months above preferred dividend obligations of $90,814.14, or 45 cents per share on the common stock.

"The net sales for the nine months' period to September 30, 1929 were $9,201,729, as compared with $9,414,139 in 1928. While the sales have decreased 2⅛ per cent, there has been an increase in the net profit earned of 20 per cent.

"The company is in a favorable position, with references to orders on hand and the last quarter's operations should add materially to the results already shown."

Proposed Changes in Descriptions and Ratings

Hearings have been held in New York in regard to proposed changes in descriptions or ratings docketed by the Consolidated Classification Committee. According to a statement at the office of the New England Paper & Pulp Traffic Association, 60 Batterymarch street, Boston, Mass., decisions are pending.

The Classification Committee has proposed to eliminate scrap paper or waste fiber board and pulpboard or strawboard not ground from the present rating.

Papeteries in boxes less carload are now rated Rule 25 in official territory and first-class in Southern and Western territory. It is proposed to make this second-class in all territories.

Carloads minimum weight 24,000 pounds are now rated fifth-class in official territory and third-class in the other territory. It is proposed to increase the carload minimum weight to 30,000 pounds and change the rating to fourth-class in all territories.

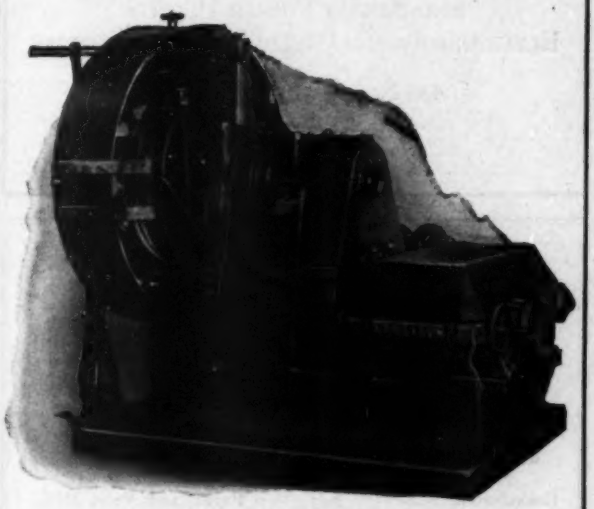
Binders board is now rated fourth-class in less carloads and sixth-class in carloads in Southern territory. It is proposed to reduce the less carload rating to fifth-class and the carload rating to eighth-class in Southern territory.

Wrapping other than oiled or waxed, printed or imprinted, or not printed nor imprinted is now rated fifth-class Southern territory. It is proposed to increase the rating to fourth-class when not printed nor imprinted and to increase the rating to third-class when printed or imprinted.

The Blackstone Box & Paper Co., of Providence, R. I., has been incorporated under the laws of Rhode Island, with a capital stock of $10,000. The incorporators are John F. Cotton, Emil S. Hall and Ruth M. Hermanson.

F. L. Higginson, a partner in Lee Higginson & Co., and widely known in financial circles throughout the country, has been elected a director of the International Paper & Power Co. His election adds another New England man to the board of directors of the International Paper & Power

Sleeper and Hartley, Inc. Worcester, Massachusetts, are manufacturers of many types of machines for coiling, winding and spiraling of wire, etc. One of their greatest achievements is their cable-armoring machine. by which flexible cable armor is produced at various speeds, up to fifteen hundred turns per minute. In this machine they have incorporated the LEWELLEN Variable Speed Transmission as shown in the accompanying illustration. Note the clean, compact unit, as a result of designing the base of their machine to exactly fit the LEWELLEN Transmission. This permits short drive centers and makes the LEWELLEN an integral part of the Sleeper and Hartley unit.



The LEWELLEN meets every conceivable problem of variable speed control. It has established a place for itself with manufacturers of machinery in the paper, textile, and baking industries, drying machinery, conveyors, and other lines. Wherever exact variable speed control is desirable, you will find the LEWELLEN Transmission is not an expense but a highly profitable investment.

LEWELLEN engineers will gladly cooperate with you, to work out the most compact and satisfactory installation for your purpose. We invite you to consider the LEWELLEN if you would have a complete solution of your variable speed control problem.

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Co., which already includes Walter C. Baylies, Frank D. Comerford, John R. Macomber, Gifford K. Simonds, Philip Stockton, and Daniel S. Wing.

The S. D. Warren Co. has declared a third quarterly cash dividend of $1.75 per share on the common capital stock, payable November 15 to shareholders of record at the close of business October 31.

Thomas T. Rogan, general superintendent of the Fitchburg Paper Co., Fitchburg, Mass., who recently underwent a major operation at the Mayo Brothers Sanitarium, is reported to be recovering.

The B. D. Rising Paper Co., Housatonic, Mass., has installed a ninety-inch sectional wheel knife grinder in the finishing department. The grinder will take a ninety-inch knife.

The Groveton Paper Co., Groveton, N. H., recently entertained in two parties representatives from the Globe Paper Co., Inc., and the Howard Paper Co., Inc., Boston. Features of the program were visits to the plant of the company, which is rapidly striding ahead, and dinners and luncheons at several hotels of Groveton and vicinity. Golf and trips to Dixville Notch were also enjoyed.

Frederick W. Main, of the Worthy Paper Co., Mittineague, Mass., gave a talk to members of the New England Printing Supply Salesmen's Guild at a dinner of the organization at the Hotel Brunswick, October 18, in regard to high grade papers.

The International Paper Co. sustained a fire loss at Mill No. 4, Berlin, N. H., October 8. The loss on the machinery is understood to be about $16,000.

Edward T. Newton, of a prominent family of papermakers, Holyoke, Mass., died recently, aged 64. He was born in Greenfield, Mass., son of the late James H. and Sarah (Taft) Newton. His father was interested in several papermaking concerns and in the latter part of his life particularly in the Chemical Paper Co., Norman Paper Co., and the Wauregan Paper Co.

Crane & Co., Inc., has announced the appointment of Edward O. Reed, technical director of the United States Government Printing Office, Washington, D. C., as technical control director for its paper mills in Dalton and Westfield, Mass., and director of laboratory work.

H. E. Lindquist, vice-president and sales manager of the Missisquoi Pulp and Paper Co., Sheldon Springs, Vt., has resigned.

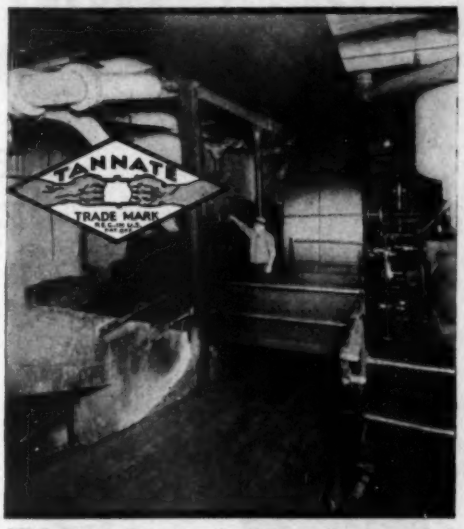
The Deerfield Glassine Co., Monroe Bridge, Mass., is sold six weeks ahead and is enjoying a very healthy period of business. There is a tendency for prices of their product to strengthen and become higher. In fact, prices of some grades have already been marked up.

A joint meeting of Carter, Rice & Co. Corp. and Storrs & Bement Co., Boston, agents of the Hammermill Paper Co., Erie, Pa., was held in the Boston Chamber of Commerce building October 25. H. R. Baldwin, manager of sales and assistant secretary, and Mr. Taft, both of the Hammermill Paper Co., spoke. The sales policy was outlined in regard to Hammermill's newest line, Management Bond, a sulphite sheet of lower grade than Hammermill Bond, manufactured in the new mill of the company at Hoquiam, Wash.

Fire gutted the warehouse of the E. G. Higgins Wallpaper Company and seriously damaged the plant of the New England Envelope Company in the rear of 274 Main street, Worcester, Mass., October 21. The damage is estimated at $300,000.

The water supply situation in New England is reported to be improved.

RHOADS TANNATE WATERSHED LEATHER BELTING



This 144′ 72″ *3-ply* Going Strong and Far Excelling Ordinary 72″ *4-ply* Oak Belt in a Big Paper Mill.

This belt drives 22 beaters and 3 Jordans. Running at about a mile a minute it transmits 1500 H.P. or more. It replaced a 4-ply oak belt that failed to deliver the required load satisfactorily.

It has been running 23 months, almost continuously. The mill men are greatly pleased with its freedom from slippage under sudden heavy loads.

The engineer declares he "likes the belt very much". One report says, "The engine has not stopped for three weeks, and the belt is pulling an awful load". A recent report says that the belt shows no signs of wear.

It pays to invest in Rhoads Tannate Watershed Leather Belting. It is always sold under the Rhoads Service Guarantee, which leaves you to be the judge of whether or not a purchase has proved satisfactory.

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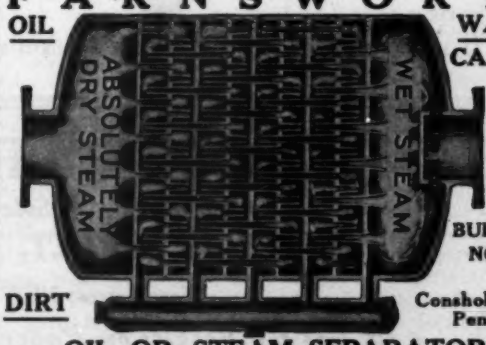

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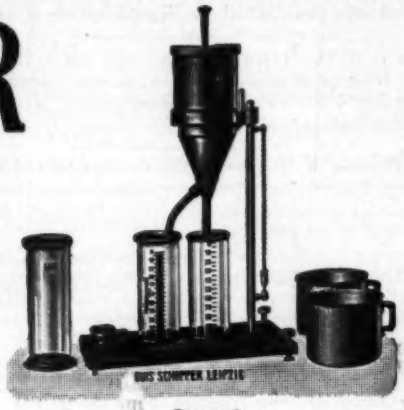
World Standard Paper Testers

All Kinds of Scales



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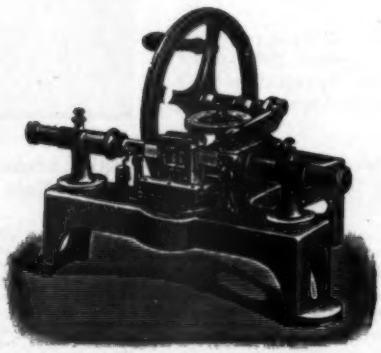
Schopper-Riegler Beating Tester

Uniformity of beating means better paper

The Schopper Standard Desk Micrometer

Carried in stock—1/1000 of an inch for Boards, 1/2000 of an inch for Paper.



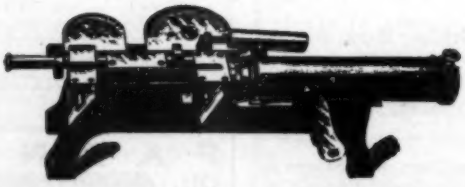
Schopper Folding Tester

The folding test has become standard for bonds, ledgers, and Kraft papers.

Schopper Strength and Stretch Tester

Small Piece Pocket Paper Scale

By weighing a piece 2 in. by 4 in., gives basis weight 25x38, 24x36, 22x34, 500 sheets.



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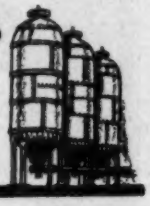
Technical Developments in the Paper Industry



Domestic and Foreign

The following abstracts are of the latest developments found in the foreign press and the domestic and foreign patent offices. Photostats and translations of complete articles and patents can be obtained at cost price.

Making Pulp

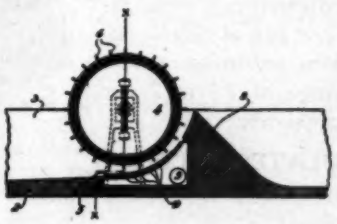
A SERIES of patents, United States Patents Nos. 1,717,794 to 1,717,800, have been issued to R. A. Marr, Norfolk, Va., on the manufacture of pulp. Cellulosic material is accordingly subjected to cooking treatment by digesting the same in a solution under superatmospheric pressure and at near the boiling point of the solution for the existing pressure. This solution contains a readily soluble alkali-forming metal sulphite as its principal dissolved active ingredient. The solution is, however, free from substantial quantities of sulphide, sulphite and hydroxide. The digestion is continued until the intercellular cementitious matter is rendered friable. The pieces of pulp, while they retain their original form under such conditions, are capable of being readily crushed. The material is then reduced to a state of a pulp.

The concentration of the alkali sulphate liquor is 0.05 to 0.2 per cent of sulphate, figured as anhydrous salt. Sulphates of magnesium and of potassium are used, and under certain conditions the digestion liquor also contains a chloride. The digestion is accomplished by partial cooking in a one to five per cent solution of a normal salt of an alkali-forming metal, such salt being derived from an acid which is stable at the temperature of the digestion process. The treatment is continued until the incrustating matter has been rendered easily friable but not until the material has been reduced to a pulp. The temperature at which the digestion is carried out is sufficient to produce a caramel odor in the liquid.

A soluble nitrate is also used as an ingredient of the digestion liquor. Cane material can be digested in a solution which contains an alkali metal sulphate and zinc sulphate.

Pulp Beater

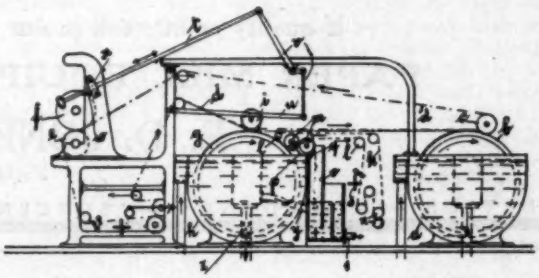
THE pulp beater, which is patented in United States Patent No. 1,712,599, filed Feb. 15, 1927, by W. Werner, Hoosick Falls, N. Y. and assigned to the Noble & Wood Machine Co., is shown in the accompanying illustration. The tub of the beater is shown at (3) and the backfall at (8). An adjustably mounted beater roll (4), the bars (6) of which are provided with serrated working edges, A hollow bedplate (10) curves rearwardly and upwardly. It is provided with a series of ridges on the surface. These ridges lie at substantially right angles to the axis of the beater roll. A draw off is connected with the hollow in the bedplate.



Production of Several Ply Cardboard

IN the new process of covering cardboard or pasteboard on the hand-operated cardboard machine, the covering layer is formed on the cylinder wire and is constantly removed from the latter by means of a special felt and transferred to the cardboard machine felt and used there. The web is carried through a box, where it is loosened from the felt and added to the stock flowing to the board machine.

In the board machine shown in the accompanying illustration, the cylinder wire (b) lying in the stuff box (a) forms the ordinary board web, which is taken up by means of the couch roll (c) and the felt (d). It is carried to the wet presses (e) and (f) and then worked up to board by the forming roll (f). The covering layer of the cardboard is formed on the cylinder wire (g), which is provided with the stuff box (h) under the felt (d), and the couch roll (i) is arranged in the latter. The covering layer of web is formed over the cardboard as it passes through the machine. The couch roll (i) comes in contact with the cylinder wire (g) at definite intervals. The specially designed cylinder wire (g) must run at the same rate of speed as the cylinder (b) which carries the



felt (d), and, as it comes into contact with the felt (d) at stated intervals only, it is driven by means of a special drive which is not shown in the illustration.

The covering layer of the cardboard is formed just as continuously as the board itself. However, only a short piece of the former is used for each board. The remainder is taken up by a special felt (k) which runs constantly with the cylinder (g) and over the guide rollers (l) and the press roll (m) and (n). It also passes through a box (o), where it is diluted and added to the board stock at a suitable point, at best in the stuff chest. The special felt (k) lies on the cylinder wire (g) and takes up tht web formed on the cylinder with the aid of the pressures created by the roll (m), as long as it is not taken up by the felt (d) to form the covering layer. The water is pressed out of the web by the roll (m), and the water is led from the gutter (p) into the box (o). The web remains adhering to the roll (m) which lies above the felt (k) and is removed by the doctor (q) into the box (o). The felt (k) is continuously cleaned by means of the spray nozzle (r) and the beater (s), and the excess water is squeezed out between the rollers (n).

When the bell of the device which indicates the thickness of the board rings, then the operator allows the couch roll (i) together with the felt (d) to rest on the cylinder wire (g), this being accomplished by means of the lever (t) and the system of levers (v) which are connected by means of (u) to the couch roll. The latter is allowed to remain in contact with the cylinder wire (g) for a period of time sufficient to cover the board with the paper web. The lever system is again manipulated to remove the couch roll from contact with the cylinder wire (g). While the board is being covered with the paper web, the felt (k) runs idle. A portion of the waste water from the cylinder wire (g) is led into the box (o) for the purpose of diluting the stock which is carried away by the felt (k), this water being fed through the pipe (y). E. Riediger, German Patent No. 476,436.

Jones Beater Installation at the National Paper Products Co., Port Townsend, Wash.

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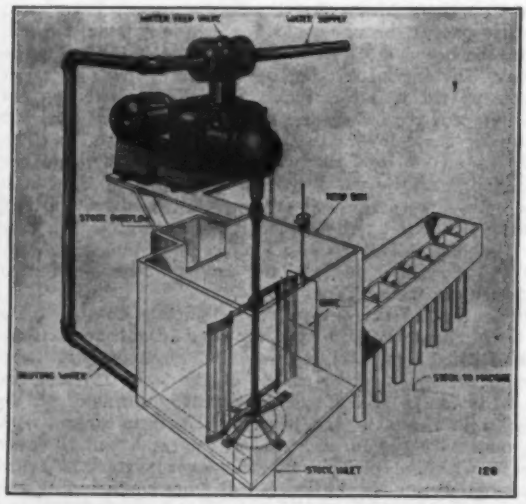
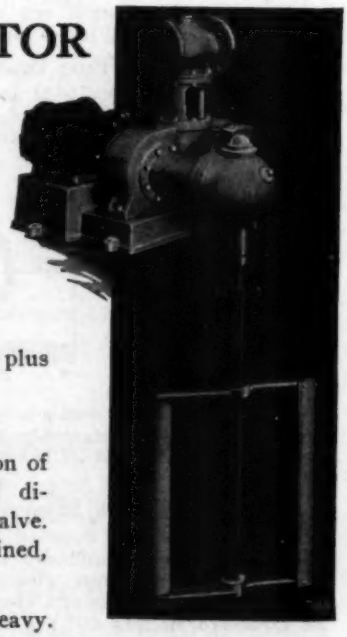
With A

MEYERS-MESCO REGULATOR





HANDLES ANY FIBRE sulphite, kraft, chip, groundwood, rag, rope, asbestos or any of their combinations, wtihin an operating range of 2.5 to 7 per cent consistency.

REGULATES BETTER than 15/100 of one per cent, plus or minus.

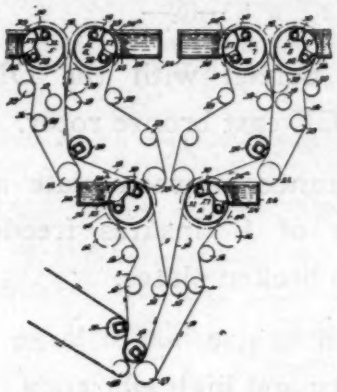
OPERATING PRINCIPLE Varying resistance to rotation of the agitator is transmitted directly to the water feed valve. The mechanism is self-contained, rugged and accurate.

SIGNAL LIGHTS show whether the stock is normal or tending to light or heavy.

MERRITT ENGINEERING & SALES CO. Lockport, N. Y., U. S. A.

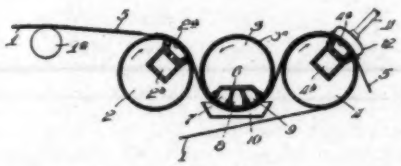
Papermaking Method and Machine

PAPER is made in a continuous sheet, and the sheet of paper is subjected, at desired stages of its reduction from the wet state to condition for drying, to the actions, first of a medium for removing moisture while supplying a lesser



amount of hot moisture, and second to a medium for removing the hot moisture. W. H. Millspaugh, assignor, The Paper & Textile Machinery Co., Sandusky, O. United States Patent No. 1,718,573, filed Sept. 14, 1922.

Plural-ply paper is made in a continuous sheet by simultaneously forming the several continuous plies, while reducing the moisture content of such plies without mechanical compression, until the plies are brought substantially to the



moisture content most advantageous for effecting bonding. Then the plies are brought together so that they are bonded. W. H. Millspaugh. United States Patent No. 1,718,574, filed May 11, 1925.

Pulp from Stock Simultaneously Chemically and Mechanically Prepared

THE new process consists of purification by means of mechanical disintegration and treatment with alkali and chlorine. Only weak solutions of the chemicals are used in the process. These solutions contain, for example, one per cent of sodium hydroxide and one per cent of active chlorine in the form of chloride of lime.

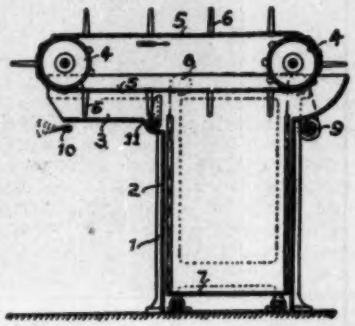
The raw material, which is previously disintegrated, is treated with diluted sodium hydroxide solution, hydrochloric acid and the like in a beater, the time of the treatment varying with the nature of the raw material. Then it is removed into a stirring apparatus, from which it is removed by means of a pump, and then it is treated further in refining engines, ball mills and the like.

The mass is then removed to presses or the like, wherein the major portion of the liquor is pressed out. The mass is then disintegrated further and mixed with bleach liquors, such as chloride of lime, chlorine water, sodium hypo-chlorite and the like. The stock is then introduced into beating equipment of the aforementioned type, with the result that both the chemical and mechanical treatments are simultaneously effected in this apparatus.

After the stock has been passed through this apparatus the required number of times, and the proper degree of comminution has been obtained, it is again passed through the presses and disintegrators and finally mixed in tanks, containing stirring equipment, with a dilute solution of sodium hydroxide or the like, and again passed through the comminutors. The final result is a stock which has been properly comminuted so that it is ready for manufacture into paper on the paper machine. Dr. Hans Muehlenbein, Dresden, Germany. German Patent No. 476,583, filed Dec. 24, 1921.

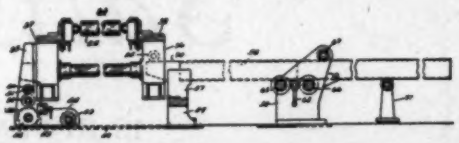
Disintegrator for Old Paper

THE manner in which the disintegrator, which is shown in the accompanying illustration and which is used in the preliminary treatment of old paper, operates is as follows. After a mass of old paper has been placed on the plate (7), the lifting device (8), (9) and the endless band knife (5), (6) are started operating. The lifting device carries the paper at a regular rate of speed to the knife band. The latter removes the paper from the bale and pulls the same in its forward motion over the knife-like lug (11). The paper is disintegrated by this treatment and is carried through the conduit (3). The spring-equipped lug arrangement is able to avoid solid impurities in the bales of paper so that the knife itself is not injured by coming into contact with them. Separation of the paper is effected in the following manner. The paper, falling out of the conduit (3) comes under the influence of a current of air produced by a blower (10), which blows the light paper into an edge mill, while the heavier particles consisting of impurities of one sort or another fall down and do not reach the edge mill. When the platform (7) has reached its highest position and all of the paper has been carried over into the edge mill, the platform is then lowered again to its lowest position and a new bale of paper is placed on it. W. Paulus, Dueren, Germany. German Patent No. 476,699, filed Feb. 21, 1925.



Papermaking Machine

THE papermaking machine contains a papermaking element which is adapted to be moved frontwise out of the normal operating position. This element has a front carriage



supported upon and movable over the ground, and a rear carriage and supporting means which consists of an elevated track and front and rear uprights for the track. These uprights support the rear carriage while it is in normal operating position and during the movement of the element. H. L. Kutter, assignor, The Black-Clawson Co., Hamilton, Ontario, Canada. United States Patent No. 1,729,350, filed Aug. 2, 1926.

Bleaching Kraft Pulp and Beechwood Pulp

THE two-stage bleaching process, in which the first stage is effected with the aid of chlorine gas and the second stage with the aid of alkaline hypochlorite liquor, has been found effective in treating pulp, which contains a large proportion of lignin, as far as it can be defibrinated. The pulp is obtained white and the total consumption of chlorine may be figured in percentage as equal to twice the proportion of the lignin present in the pulp. The bleaching loss has also been found to be generally proportional to the lignin content. The pulp is materially improved in strength in the preliminary bleaching with pure chlorine gas. The papers that are manufactured from the bleached kraft pulps are generally characterized by possessing great strength.

Stocks, which are prepared from wood, such as hemlock, and which are difficult to bleach by the ordinary chloride of lime process because of their content of tannins and color-

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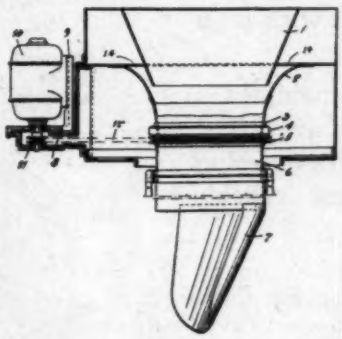
ing matters, are obtained in a good white state by the combined process. Soda cellulose, containing a high proportion of lignin and prepared from beechwood, possess a characteristically high strength. The strength can be materially improved by treating the pulp with chlorine. This beechwood pulp can be bleached white by the two-stage process. The pulp thus obtained can be mixed with soda pulp or sulphite pulp obtained from coniferous woods, and the papers manufactured from this stock will be white and possess average strength. Acta Academiae Aboensis Math. et Phys., volume 5, number 4, pages 1-19.

Apparatus for Charging Pulp Digesters

THE apparatus, which is seen in the accompanying illustration, consists of a funnel-shaped member (1) for feeding the material to the digester. A second funnel (2) is located below the first in an overlying relation for directing air under pressure past the funnel (1). The members (1) and (2) are coaxial with one another, whereby material passing through the first funnel (1) into the second funnel (2) will be entrained by the air and will be projected from the funnel (2) at a high velocity. A rotating trough is mounted on the open end of the second funnel (2). This trough is shown at (7). P. A. Fresk, Robertsfors, Sweden. United States Patent No. 1,729,575, filed April 12, 1926.



Mechanical Wood Pulp

MECHANICAL wood pulp consists of a mixture of substantially unchanged wood fibers with fibers which have been broken, torn, or ground into smaller fragments and form the so-called meal-stuff. The relative proportions of the papers made from the pulp, and their determination is a matter of importance. The Hurum apparatus for this purpose is described. It consists essentially of a glass cylinder fitted with a stirrer, and a metal base with a two-way tap through which water may be admitted to or removed from the cylinder. Sieves made from coarse or fine cloth are placed in the cylinder with the pulp and the metal-stuff is washed through while the long fibers are retained. With increasing meal-stuff content, the degree of grinding and the tearing length of the pulp as a whole increases. The strength of a mixture of mechanical wood pulp and cellulose (as shown by tearing length) may exceed that of either of these materials alone. P. Klem, Der Papierfabrikant, 1929, volume 27, pages 467-469.

Chemical Control in the Sulphite Process

A VERY thorough study has been made of the chemical conditions surrounding the sulphite process and of methods that can be used for their control. The authors first spend considerable space in discussing the chemical mechanism of sulphite digestion and point out that a satisfactory explanation has not yet been evolved. The theories of various investigators are compared. It is pointed out that there are three separate stages of sulphite digestion which are differentiated from one another by the color, odor and viscosity or stickiness of the waste liquor and chemically by the content of lignosulphonic acid, sugar and inorganic ingredient in the liquor. These stages are the preliminary cooking period, the decomposition period and the quality cooking period.

The authors describe methods for testing the liquor and go into considerable detail to describe the method and the results obtained when benzylidene dihydrochloride is employed as the reagent. The results obtained are given in tabular form and also in the form of graphs. A large number of experiments were carried out with the use of beta-naphthylamine hydrochloride as precipitating agent and also with benzylidene dihydrochloride.

The following conclusions were derived from these investigations. Vanillin, which is obtained by oxidation with the aid of nitric acid in the cold from beta-naphthylamine lignosulphonic acid, benzidine lignosulphonate and from ordinary and dialyzed waste liquor, shows that the Klason theory, which holds that alpha lignin contains a coniferyl group, is substantiated. From the indirect determination of alpha-lignin-sulphonic acid, in which it is precipitated with the aid of benzidine hydrochloride and the non-used benzidine is determined, and from the investigation of the precipitated product, the following results were obtained. The precipitation, which was effected by means of benzidine hydrochloride in the sulphite waste liquor, yielded at least two compounds, one of which was salted out by means of an amine, while the other was a compound of alpha-lignosulphonic acid and amine.

The alpha-lignosulphonic acid, which is dissolved during the progress of the digestion absorbs sulphurous acid during the cooking, which causes an increased absorption of amine. The analytical results obtained from the benzidine precipitation from the waste liquor of a digestion process, in which an effort is made to obtain a high grade of pulp, indicate that a marked change in the character of the waste liquor takes place during the digestion process. It can also be established, in conformation with the Haegglund theory, that the digestion process can be divided into two parts; one, a sulphonation period, and, two, a hydrolytic period. If the beginning of hydrolysis is designated as the beginning of decomposition, then it follows that this sets in at different times, calculated after the start of digestion, for different kinds of woods.

At the end of the hydrolytic process, the fibers have not been entirely freed of incrustating material. This takes place for the first time in that part of the process which is devoted to obtaining a high quality pulp, and this stage of the process may be long or short according to the desired quality of the pulp. B. Rassow and H. Kraft, Der Papierfabrikant, 1929, pages 489-495; 508-514; 524-527.

Closed Beater Working at Low Pressure

THE trough in the new type of beater, which is shown in the accompanying illustration, is shown at (a) to consist of a closed tubular circulating canal located in a vertical plane. The beater roll (b) is located at the highest point in this canal and this beater roll works in conjunction with the bedplate (c). The casing of the beater trough (a) is built into the shape of a dome (d) above the beater roll (b), and the low pressure line (e) is connected with this dome. The defibrinating device (f) is shown in the illustration located at the lowest part of the tubular canal and this device is carried on the shaft (g). This defibrinating device is moved by the vacuum itself, which exerts its action in the direction of the arrow as shown. The result is that the stock moves in the circulating canal in the counter-clockwise manner, while the beater roll rotates in the clockwise direction.

The casing of the beater is built into the form of a backfall or bresting (k) on one side of the beater roll (d). It is also formed into the shape of a hood (l) on the other side. The backfall (k) and the hood (l) tightly enclose the beater roll and serve to maintain the vacuum effect and the correct circulatory motion of the stock.

The new arrangement allows the direct introduction of rag half stuff, cellulose and mechanical wood pulp in the form of lumps, balls and sheets and effects uniform mixing and distribution of the stock being ground, without it being necessary to consume additional power or without it being necessary to provide a special drive for the apparatus. A saving in power is also effected as compared with the arrangement which consists of a special defibrinating machine located separately from the beater. The vacuum cannot get out of order and this type of beater can be used for all purposes for

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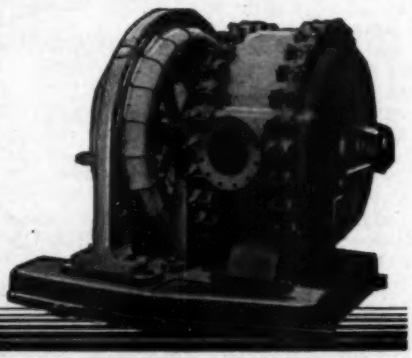

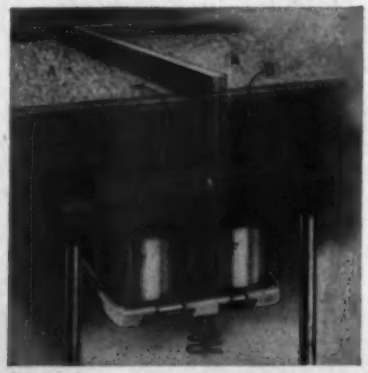

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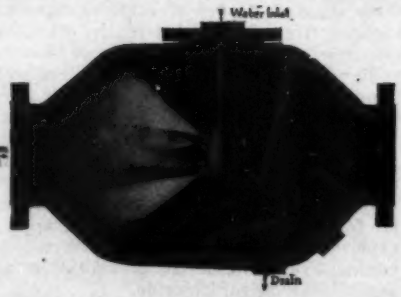
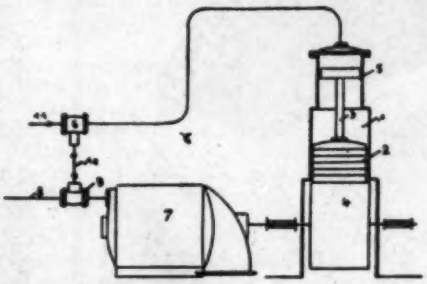


which the ordinary beater is employed. F. Arledter, Koeln-Kalk, Germany. German Patent No. 480,644, filed Feb. 22, 1924.

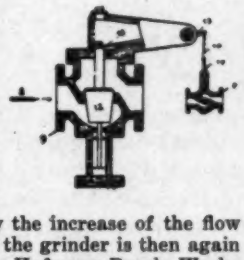
Regulating Pressure in Wood Grinders

THE regulation of the grinder in the new improvement is effected in direct relation to the quantity of steam consumed in the prime mover. The regulation is accomplished in such a manner that the steam line of the steam engine is provided with a steam flow meter, which acts directly or through the agency of an auxiliary motor on the pressure applied in the feed cylinders of the grinder.

The illustration in Figure 1 shows a way of carrying out this invention. The grinder is of the hydraulic type. The wood



is intermittently pressed against the stone. The mass of wood (2) in the press (1) is pressed against the stone (4) by means of the moving piston (3). A pressure is exerted behind the piston (5) and this pressure is regulated in the usual manner by means of the reducing valve (6). The stone is rotated by means of the turbine (7), which is fed with steam through the pipe (8). A steam flow meter (9) is built into the line (8), the meter being connected by means of the rod (10) with the reducing or throttling valve stem (14) of the valve on the hydraulic pressure line. As the quantity of steam increases and the position of the cone (12) rises, a throttling effect is engendered in the valve (6), with the result that the load on the grinder is relieved and the original total load on the turbine is re-established. The reverse effect takes place when the load on the turbine (7) is relieved, with the result that the original load conditions are re-established by the increase of the flow through the throttling valve (6) and the grinder is then again placed under increased load. Linke-Hofmann-Busch Werke A. G., Bad Warmbrunn, Germany. German Patent No. 478,-611, Sept. 26, 1925.



Causes of Variation in Quality of Mechanical Wood Pulp

THE quality of the mechanical wood pulp is determined with the aid of the blue glass test and microscopic examination, as well as of the Schopper-Riegler apparatus and strength tests. The effects of various operating conditions in the grinding process were then studied. These influences were the specific grinding pressure, the quality of the stone, the method of sharpening the stone, the dry fiber content of the wood and also of wood which has been subjected to dry rot. The wood was ground in a magazine grinder. The pressure within the grinder was not varied except within the limits of 0.8 to two kiligrams per square centimeter, and hence it was not possible to determine the influence of higher or lower pressures.

The observations that were made during that portion of the experiments in which the specific pressure was varied showed that coarser stocks are obtained by working with various specific pressures and various degrees of sharpness in the stones, the higher the pressure. It was determined that mechanical wood pulp is made in best quality when the grinding surface was approximately fifteen to sixteen square meters. This is in the case of rapid grinders. It was also found that paper suitable for rotary press work is best made from mechanical wood pulp ground at a pressure of 1.4 kilograms per square centimeter, but that this applies only to relatively moist wood in the grinder. A somewhat higher pressure must be used when the wood is dry.

The grinding temperature is also investigated. It is concluded that when the quality of the wood remains the same, the consumption of power per ton of groundwood is less, the higher the temperature. It is stated that natural stones give as a general rule the best pulps. Nevertheless, it is not possible to state exactly whether the natural stones are more advantageous than the artificial stones in grinding wood for manufacture into paper for printing by the rotary press.

The method of sharpening the natural stone has a considerable influence on the quality of the wood pulp obtained. Viewpoints regarding the best method of sharpening the stones vary widely. The pressure that is applied to the stone during the sharpening process has an important effect on the results.

The dry fiber content of the wood has a very significant effect on the operating conditions of grinding. Wood possessing about thirty to forty-five per cent of water is best suited for the production of pulp to be made into paper for the rotary printing press. J. Enckell, Der Papierfabrikant, 1929, pages 498-500.

Pulp from Sugar Cane

THE pulp or bagasse from the extraction of sugar from cane can be used for papermaking. The pulp after being screened passes to an agitator or mixing box which contains blades. The overflow from the box passes into a separator in which a cylindrical screen revolves partially submerged in the pulp so that the liquid passes through the screen and is drawn off through an opening, while the solid portion of the pulp is deposited on the screen, carried out of the bath and scraped by doctors into a second mixing box. The pipe discharges the weak sugar solution from a subsequent separator into this mixing box. Any number of separators and mixing boxes may be used, fresh water being directed into the last mixing box and from the first separator the strong sugar solution is discharged through a pipe to the sugar boiling house. The liquid from the second separator is conducted through a pipe to the grinder where it is sprayed uniformly over the surface of the grindstone. The pulp is discharged from the last separator into a conduit from which it may be taken directly into the papermaking plant. The pulp is thus obtained directly from the sugar cane by grinding the latter in a suitable grinder. H. G. C. Fairweather. British Patent No. 314,174.

New Indirect Digestion Process

THE article starts with a short history of the development of indirect digestion of wood with alkali liquor. The newest development is the so-called Albeniel system. A concentrator is part of the installation and serves two purposes, indirect digestion and concentration of the digestion liquor. The apparatus is in principle like the recuperators used for indirect digestion, but possesses double the length of the ordinary recuperator. The S-shaped heating tube is characteristic of the apparatus, which avoids formation of scale. The author describes very accurately the actual operation of the apparatus, which is divided into two zones, the preheating zone and the evaporating or concentrating zone. One concentrator can be used for one or also two digesters.

The duration of the concentration period is calculated to be two and one-half hours. The direct consumption of fresh steam is greatly reduced in this apparatus and at the same time it is maintained quite constant. The combustible matter in the liquor is less used for the concentration of the latter as under boilers for the production of steam. The black liquor at the end of the digestion has a concentration of 24 to 26 degrees Be. at a temperature of 70 degrees C. It is not necessary to use the customary evaporator in the recovery operations. It is possible to avoid any addition of fuel for digestion and concentration of the liquor. The consumption of fuel is only 1.4 kilograms per ton. It is possible to make steam in sufficient quantity so that it can be used for other purposes than those connected with the digestion process. Costs are considerably reduced. J. W. Brunn, Papir Journalen, volume 17, pages 104ff, year 1929.

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EVERY child goes through the alphabet age. So did the human race in its childhood. Herodotus wrote of "Cadmus the Trojan" who is credited with having introduced the Phoenician alphabet among the Greeks. The latter, having learned to make symbols represent sounds, would write their first line from right to left after the fashion of their Semitic teachers. Then the second line would run from left to right, and so the inscription would wind back and forth. Soon, however, Greek writing settled down to a left to right order.

The Greek characters were changed by the Romans, whose ideas of letter formation we have modified very little even to this day.

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THE paper industry is characterized by fair activity, judging by most indications and according to a majority of reports. Business is developing in consistent fashion and in gradually broadening volume. Ever since the termination of the summer lull in general commercial and industrial activity, buyers of paper have been increasing their operations in the market steadily, and it can be said that at the moment the buying movement has assumed dimensions where demand for paper, in the aggregate, doubtless is larger than has been witnessed at any period this year. Demand is healthy, decidedly so. There is little acquisition of supplies other than to satisfy actual and direct requirements. Consumers are buying freely enough to cover present needs, but are mostly reluctant to anticipate wants; jobbers are keeping their stock shelves moderately well filled, yet they are not commencing to carry the stocks of paper that they were accustomed to some years ago, and from just about all consuming and distributing quarters demand is developing in substantial volume although along conservative lines.

The recent debacle in the securities market is not expected to harm general business. In fact, the feeling is common among business interests that it is going to benefit the commercial structure of the country, on the theory that with so many business men shaken loose from the stock market, they will devote more time and attention—and also capital—to their individual businesses, and thereby help to stimulate the general flow of trade. Probably some of the so-called luxury industries will be affected adversely for a time; perhaps not so many automobiles will be sold, maybe the fur coat demand will diminish, doubtless there will be less jewelry sold, but economists, bankers and manufacturers agree that the necessary commodities—and within this general designation comes paper, of all kinds—should continue to move in equally as large volume as has been seen recently.

Pinning the outlook down specifically to the paper industry, it must be stated that there seems every reason to expect excellent business in nearly all classes of paper. With business in general good, and promising to record additional expansion, there should be a brisk demand for fine paper for stationery and direct mail advertising literature. Also, with the pre-Christmas retailing season approaching, consumption of and demand for wrapping, tissue and other paper used by retailing establishments are due to increase further. Advertising is still on the upswing, and from all signs has not yet reached the apex for the year; therefore there should be a still larger consumption of newsprint and book paper, and a resultant broader call from publishers for these papers.

Mills in various parts of the country are reported fairly busy. Some are operating at maximum, or very close to maximum, capacity; others are failing to procure sufficient orders to warrant full production but are working at a better rate than at any earlier period this year. The industry as a whole is said to be producing and shipping, and booking new business, on a larger scale than in a considerable while. Prices of most classes of paper are stable. There is little or no advancement noted in prices of paper or board. "Funny, but paper prices don't advance any more," remarked a representative member of the trade, commenting on the lengthy period in which virtually no rise at all has been seen in any line of paper in any quarter of the industry. It is true that manufacturers in some instances are continuing to grant price concessions. Consumers and jobbers assert that when they have orders for sizeable quantities of paper or board to place, mills with apparently little hesitancy are willing to shave asked prices to book the business, more especially when the order or orders mean long runs for the machines in the mills. And yet it can be said that the tone of paper prices is steadier today than it has been in sometime.

Paper production in the United States increased 7.6 per cent in August as compared with the preceding month, according to the monthly statistical summary compiled from reports of identical mills to the American Paper and Pulp Association. The output during August totaled 596,562 tons, against 554,047 tons in July, and recording also an increase equivalent to 4.7 per cent over the August, 1928, production. All individual grades, with the exception of hanging, bag and wrapping papers, registered increases over last year in the month's production, with uncoated book paper output up 10 per cent, tissue 9 per cent, paperboard 7 per cent, felts and building 6 per cent, writing 5 per cent, and newsprint 4 per cent. Shipments from mills during August aggregated 595,512 tons, contrasted with 554,055 tons in the preceding month, while mill stocks at the end of August amounted to 254,479 tons, compared with 252,400 tons a month previously.

September production of newsprint in the United States and Canada showed a slight decrease as compared with August, according to the News Print Service Bureau. United States mills produced a total of 108,155 tons and shipped out 107,495 tons in September, against 120,868 tons produced and 118,789 tons shipped in August, while Canadian mills made 227,665 tons and shipped 226,623 tons, contrasted with 225,873 tons manufactured and 224,254 tons shipped in the preceding month, making a total production for the two countries of 335,820 tons and shipments of 334,118 tons in September, compared with 346,741 tons made and 343,043 tons shipped in August. During September, 20,773 tons of newsprint were made in Newfoundland and 1,298 tons in Mexico, so that the total North American production for the month amounted to 357,851 tons. The Canadian mills produced 261,318 tons more in the first nine months of this year than in the same time last year, which was an increase of 15 per cent. The U. S. mills produced 9,278 tons or one per cent less than in the first nine months a year ago, while Newfoundland production was 17,659 tons or 10 per cent greater, and production in Mexico was 1,839 tons more, making a total increase for the Continent of 271,538 tons or 9 per cent over the same period of 1928. Newsprint mills in Canada operated at 91.3 per cent of rated capacity in September, U. S. mills at 80.3 per cent, and Newfoundland mills at 109.6 per cent. Stocks of newsprint at Canadian mills at the end of September were 30,742 tons, and at U. S. mills 26,490 tons, making a combined total of 57,232 tons, which was equivalent to 3.6 days' average production.

The paperboard industry also was slightly less active in September than in August, judging from the statistics in the monthly summary of board manufacturing compiled by the U. S. Department of Commerce in Washington. Board production during September amounted to 237,759 tons, contrasted with 264,365 tons in the preceding month, and making a total for the first nine months of this year of 2,227,948 tons, against 1,992,081 tons in the similar period last year. New orders received by board manufacturers in September called for 246,801 tons, against 257,318 tons in August last, while unfilled orders held by mills at the end of September were for 87,304 tons, compared with 82,969 tons a month before. Shipments of board from mills in September aggregated 242,421 tons, or in excess of the month's production, and compared with 262,889 tons in the preceding month, while stocks of board at mills declined from 61,853 tons at the end of August to 58,664 tons at the close of September. Board mills consumed a total of 230,146 tons of waste paper in September, and had stocks on hand at the end of that month amounting to 174,526 tons.

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Papermaking Rags

In a general way, there is fair activity in the papermaking rag market. Demand from consuming quarters is developing in comparatively good volume for some grades, and although mills are buying in a somewhat spotty manner and are concentrating their orders—so it would seem—on a few kinds of rags, the business current is in the aggregate of fair dimensions. While there is a relative scarcity of some descriptions of rags, the supply situation mostly is in favor of buyers. Not alone are paper manufacturers getting all the stock wanted, but only in exceptional instances are they finding it necessary to grant higher prices than have been ruling for some time; on the other hand, market levels are holding quite steady.

As a matter of fact, prices of papermaking rags are not, and have not been for a lengthy period, characterized by the broad fluctuations which in the old days was something of a feature in this market. Looking back over this year, it is found that the price range in the rag market has been exceedingly narrow—on virtually every class of rag consumed by papermakers. There has been some little breadth of quotations but it has been small and certainly not of the scope which the market was accustomed to witness in years gone by. What the reason of this is, is difficult to say, but it is presumed to be in part the more advantageous buying policy adopted by paper mills, and in part to a smaller demand for rags as a result of the increased use and production of sulphite papers.

At the moment, it can be said that there is a proportionately better call for the higher grades of papermaking rags than for the cheaper qualities. This represents rather a turnabout in the market from the situation earlier in the year and during most of the current year when roofing stock was in good demand and the better qualities for fine paper manufacture were comparatively quiet. Recently, demand for roofing grades has slowed down, due, it is reported, to a quieter condition having developed in the roofing and flooring felt industry, whereas fine paper mills have in quite a few cases manifested increased interest in rags and have been more actively in the market as buyers. Certain of the high grades are in limited available supply, owing to their reduced production, and prices of these rags are firm and showing a rising tendency. Roofing stock, on the other hand, is on the downtrend quotably.

With the single exception of No. 1 white shirt cuttings, new cotton cuttings display a steady price tone, with quotations on some grades tending to harden. Lack of demand for and a gradual accumulation of stocks have led to a decline in prices of No. 1 white shirt cuttings to where these rags are reported available at 10 cents a pound f.o.b. shipping points, and perhaps at a shade under this price level in certain cases. New unbleached muslins are in good demand and firm in price at 11 cents a pound at dealers' shipping points, as are new fancy shirt cuttings at 6.25 to 6.50 cents, new blue overall cuttings at 7.75 to 8 cents, new light silesias at 8 to 8.25 cents, light flannelettes at 8.25 to 8.50 cents, and No. 1 washables at 5 to 5.25 cents. New linen cuttings are selling freely and at firm prices, both domestic and foreign grades.

Domestic roofing rags have eased to where sales of No. 1 packing or cloth strippings have been reported in the East at 1.80 cents a pound f.o.b. shipping points, and of No. 2 packing at 1.40 cents per pound. Most consuming mills are out of evidence as buyers of these rags, temporarily at any rate. Foreign dark colored cottons are reported bringing 1.55 to 1.60 cents a pound ex dock New York, and foreign linsey garments 1.80 to 1.85 cents on the dock. Old No. 1 repacked whites are selling at 5.50 cents upward f.o.b. New York, and No. 2 repacked whites at 2.75 to 3 cents, with well above these prices obtained for better quality country packing. Repacked thirds and blues are steady quotably at 2.50 to 2.75 cents a pound at dealers' points, and rough blues are fetching around 1.85 or 1.90 cents.

Average quotations f.o.b. shipping points and ex dock New York are as follows:

New Stock	New York and Chicago
White shirt cuttings, No. 1	10.00–10.50
White shirt cuttings, No 2	6.75– 7.00
Fancy shirt cuttings	6.25– 6.50
Washables, No. 1	5.00– 5.25
Unbleached muslins	10.75–11.00
White lawns	9.50–10.00
Overall cuttings, blue	7.75– 8.00
Black silesias	4.75– 5.00
Light flannelettes	8.25– 8.50
Canton flannels, bleached	9.75–10.00
Canton flannels, unbleached	8.50– 8.75
Shoe cuttings, bleached	7.50– 7.75
Shoe cuttings, unbleached	6.50– 6.75
Light silesias	8.00– 8.25
O. D. khaki cuttings	6.00– 6.25
Mixed khaki cuttings	5.00– 5.25
Corduroy cuttings	3.25– 3.50
Cottonade cuttings	3.00– 3.25
Linens, No. 1 white, foreign	15.00–16.00
Light prints, foreign	4.00– 4.50
Old Stock—	
Whites, No. 1, repacked	5.50– 6.50
Whites, No. 2, repacked	2.75– 3.00
Whites, house soiled	2.00– 2.25
Whites, street soiled	1.85– 2.00
Lace curtains	5.00– 5.25
Thirds and blues, rough	1.80– 2.00
Thirds and blues, repacked	2.50– 2.75
Black stockings	4.10– 4.25
Cotton canvas, No. 1	4.25– 4.50
White cotton batting	3.50– 3.75
Roofing, No. 1 (cloth strippings)	1.75– 1.85
Roofing, No. 2	1.40– 1.50
Linsey garments, foreign	1.80– 1.85
Dark colored cottons, foreign	1.55– 1.60
Blue linens, foreign	4.00– 4.50
Gray linens, foreign	4.50– 5.00
White linens, foreign	8.00– 9.00
Light prints, extra, foreign	2.50– 2.75

Rope and Bagging

Both old rope and scrap bagging are favored with a fairly active demand from paper mills, as well as from other consuming quarters, and exhibit a steady price tone. Old rope values have strenghtened somewhat. Dealers report sales of No. 1 domestic old manila rope to paper manufacturers at 5 cents a pound f.o.b. shipping points, and it is said that in exceptional cases above this price has been procured, while No. 1 foreign old manila rope is bringing 4.25 to 4.50 cents ex dock New York or other American Atlantic ports with importers asserting that it is difficult for them to buy abroad at prices permitting them to sell to paper mills at the figures mentioned and realize a fair profit. Strings and the off grades of old rope are in fair call, and are holding their own quotably.

No. 1 scrap bagging is readily selling at 1.60 to 1.65 cents per pound at dealers' shipping points, and demand from paper mills is reported to have expanded considerably for this material lately. Roofing bagging is quoted at 1.25 to 1.30 cents a pound at shipping points, and also has moved well, although in rather quieter demand at present.

Lindsay Spiral Weave Fourdrinier Wires

(Patented Oct. 1927)

Represent the latest idea in paper machine wire cloth.

They prevent grooving of Suction Boxes, scoring and filling up of seams. This overcomes the necessity of planing the suction box covers and adds to the life and tonnage of the wires.

Lindsay Wire Weaving Company

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BARRE GRANITE IN PRESS ROLLS

Is Revolutionizing the Whole Paper Making Industry

If your Paper Machines are not equipped with Press Rolls of BARRE GRANITE you are not getting the results that you should get, for it is a recognized fact that granite rolls are much superior to any others and Barre Granite the best of all. Let us tell you about them.

Jones Brothers Company

BARRE, VT. BOSTON, MASS.

F.o.b. shipping points and ex dock New York quotations follow:

	New York and Chicago
Gunny, No. 1 domestic	1.50–1.60
Gunny, No. 1 foreign	1.45–1.50
Scrap bagging, No. 1	1.60–1.65
Roofing bagging	1.25–1.30
Wool tares, heavy	1.65–1.75
Wool tares, light	1.55–1.65
Manila rope, No. 1 foreign	4.25–4.50
Manila rope, No. 1 domestic	5.00–5.25
Sisal strings	1.75–2.00
Mixed strings	.90–1.10

Old Paper

It is unusual indeed for the waste paper market to pass through the months of September and October without recording an advance in certain grades, more especially the low or board-mill grades, but this has been the case this year. It can even be said that, instead of staging a rise, prices of some classes of old paper have sagged quite perceptibly, and now are on lower levels than have been seen in sometime. The market at best is dull, and values are on the easy side. With the exception of two or three grades, demand is very slow and not sufficient to sustain prices.

Soft white shavings are moving better perhaps than any other class of stock. Good-quality soft white shavings are bringing 2.60 cents and higher per pound f.o.b. eastern points, with one-cut shavings worth all of 2.80 cents a pound. Heavy books and magazines also are in good call and are selling at 1.35 cents a pound f.o.b. New York for No. 1 packing. Moderate demand is reported for kraft grades and some of the new manila grades. Hard shavings, on the other hand, are still under neglect of buyers, who seem to be getting the limited supplies desired at almost any price within reason, and the low grades such as news and mixed paper have sunk to new low price levels. Folded news is reported available in the East at as low as 50 cents per hundred pounds f.o.b. New York, and No. 1 mixed paper at 37½ cents per hundred pounds. Ordinary packing of ledger stock is to be had at 1.15 cents per pound f.o.b. New York, and No. 1 old kraft paper at 1.75 cents.

The following are quotations named by dealers f.o.b. shipping points:

	New York and Chicago
Hard white shavings, No. 1	2.60 –3.00
Hard white shavings, No. 2	2.40 –2.60
Soft white shavings	2.40 –3.00
Colored shavings	1.00 –1.25
Heavy book, No. 1	1.35 –1.45
Crumpled book, No. 1	1.00 –1.10
Ledger stock	1.15 –1.40
Kraft, No. 1	1.70 –1.90
New kraft cuttings	2.40 –2.60
White blank news	1.60 –1.70
Manilas, No. 1	.70 – .90
Manilas, container	.50 – .60
Folded news	.50 – .65
Sulphite mill wrappings	.75 – .85
Old corrugated boxes	.65 – .70
New corrugated box cuttings	.75 – .85
Mixed paper, No. 1	.37½– .50
Common paper	.30 – .40

Pulpwood

The market for pulpwood displays a steady price undertone, and business in the commodity is reported transpiring in a regular manner and in fair volume for this period of the year. There is no change of consequence in the situation, however.

Exports of pulpwood from Canada, all of which came to the United States, during the first nine months of 1929 totaled 1,081,701 cords, valued at $11,009,225, compared with 1,285,127 cords of a value of $12,649,787 in the corresponding time last year.

Mechanical Pulp

The price tone in mechanical pulp is not as strong as it was some while ago, yet quoted rates are well maintained and the market appears to be in a rather firm statistical position.

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An ideal wetting-out and softening agent for new and old press felts. An effective cleaning agent in place of sulphuric acid. Strictly neutral.

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SAVANNAH, GA.
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ATLANTA, GA.
MARRERO, LA.
BURLINGTON, ONTARIO
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Cut your cost of Production
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The use of Efficient Equipment
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2. Acidmaking
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4. Screening
5. Dewatering
6. Drying

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A FIRST REQUISITE
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Purity 99½%

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We are equipped to make these tanks, either straight or tapered, in any size desired from 100 gallons to 100,000 gallons capacity; of Genuine Red Gulf Cypress, Douglas Fir, Long Leaf Yellow Pine, and other woods suitable for tanks.

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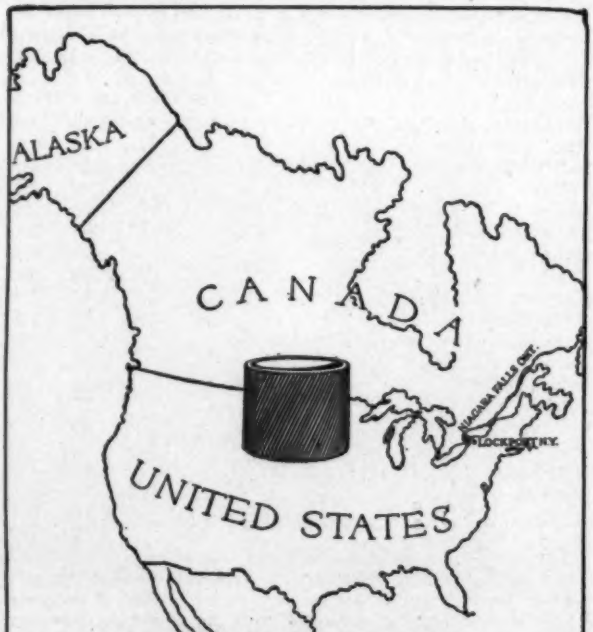

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MANUFACTURERS OF
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Demand is fair, though not as pressing as it was in the late summer months when the drought prevented producers from operating in a normal way, and most of the supply coming onto the market is being absorbed readily.

Impressive indeed are the latest issued statistics relating to groundwood production, stocks, etc., which show that production in the United States in August amounted to 72,721 net tons, or a decrease of 7,413 tons from the 80,134 tons produced in July, while producers used a total of 92,147 tons during August, or 19,426 tons more than was manufactured in that month. Mill stocks at the end of August were reduced to 89,688 tons, showing a decline of 21,452 tons as compared with 111,140 tons held at the end of July, and representing the smallest stocks held by mills at any time since the end of last February.

Grinders in Canada are asking $25 and $26 per ton f.o.b. pulp mills for prime groundwood, while domestic groundwood is around a price basis of $28 a ton at shipping points. Scandinavian groundwood is quoted at $35 to $36 per short ton for dry and $33 for moist pulp ex dock American Atlantic ports.

Chemical Pulp

Reports tell of a steady movement of domestic chemical wood pulp into consuming channels. Paper manufacturers are buying in consistent fashion, and also are absorbing supplies in good volume against old contracts and orders; most producers are said to be well fixed with commitments and are operating their plants on a steady schedule very close to maximum capacity. Prices of all classes of domestic pulp, with the possible exception of bleached sulphite, are holding firm. In some instances bleached sulphite is being offered at concessions, it is stated, although the popular brands continue to be quoted at 3.75 to 4.25 cents a pound f.o.b. pulp mills, with higher asked for extra qualities. Unbleached sulphite is selling at 2.75 to 3 cents a pound for book grades, and 2.50 to 2.75 cents for newsprint grades. Bleached soda pulp is steady quotably at around 3.50 cents a pound delivered paper mills, as is No. 1 domestic kraft pulp at 2.75 to 3 cents, on an average, at producing points.

Mills in the United States produced a total of 134,844 tons of chemical wood pulp in August, contrasted with 125,450 tons in July, according to figures compiled by the American Paper and Pulp Association. Stocks at producing mills at the end of August amounted to 21,888 tons, against 20,844 tons a month previously.

Quotations f.o.b. pulp mills are as follows:

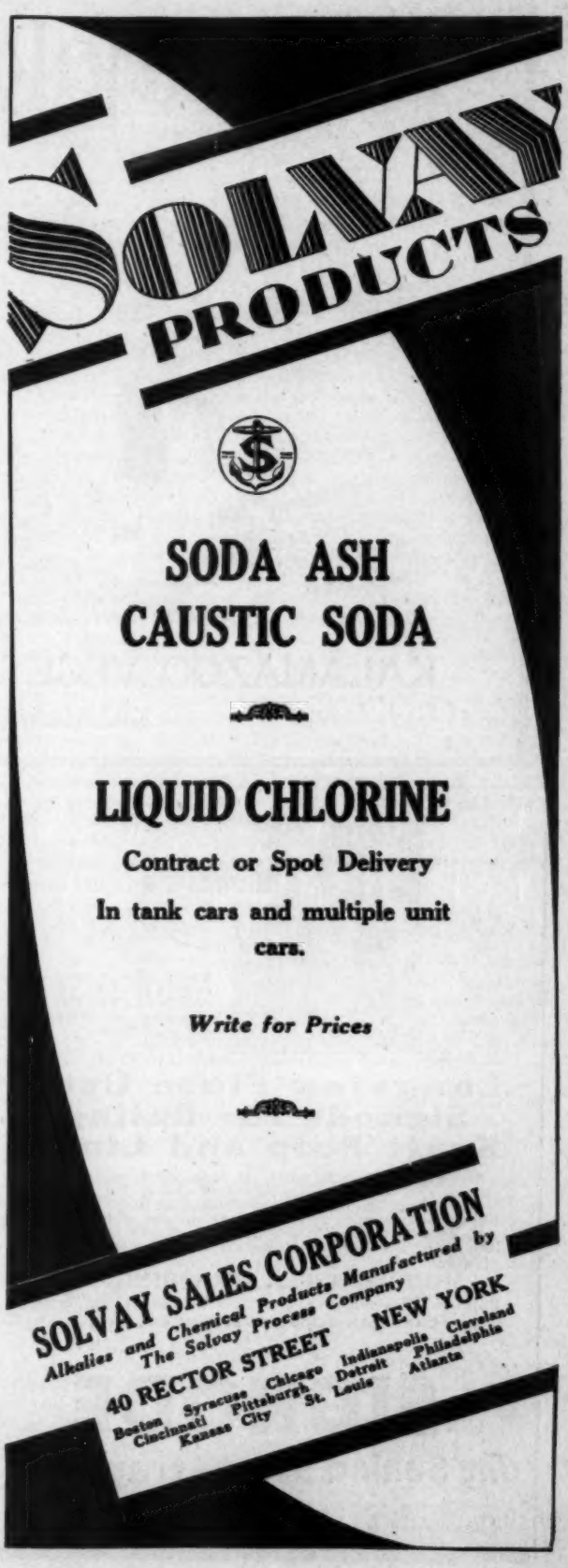
Bleached sulphite	3.75–4.75
Easy bleaching sulphite	2.75–3.00
Unbleached sulphite, No. 1 strong (news grade)	2.50–2.75
Unbleached sulphite, No. 1 book	2.75–3.00
Soda pulp, bleached (delivered)	3.35–3.60
Mitscherlich, unbleached	3.00–3.25
Kraft, No. 1	2.75–3.00
Screenings, refined	1.60–1.85

Chemicals

Most chemicals for pulp and paper mills are moving moderately well, and are quotably steady. Bleaching powder is adhering to a price level of 2 to 2.35 cents a pound in large drums f.o.b. works. Caustic soda is quoted at 2.90 to 3 cents per pound for the solid caustic for spot delivery, and soda ash is maintained in price at 1.32½ cents a pound f.o.b. works. The U. S. Senate in revising schedules of the proposed new tariff voted to increase the duty on casein from the present rate of 2½ cents a pound to 5½ cents. Whether this rate will stand when the bill is finally enacted into law remains to be seen, however.

Average quotations are as follows:

Alum, lump ammonia	3.50 – 3.75
Alum, lump starch	3.75 – 4.00
Blanc fixe, powdered	3.75 – 4.00
Bleaching powder	2.00 – 2.35
Brimstone (long ton, at mine)	18.00 –20.00
Casein (duty paid)	15.50 –16.50
Caustic soda, spot delivery	2.90 – 3.00
China clay, domestic washed	8.00 –13.00
China clay, foreign	15.00 –21.00



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Years ago when we started to make

KVP PAPERS

we thought they were pretty good, but we were not satisfied to let them go at that and so we asked our customers to point out to us the "freckles" if they discovered any, with the result that we improved and kept on improving until now we can frankly say to you that there is nothing better, in their line, than KVP Papers.

KALAMAZOO VEGETABLE PARCHMENT CO.

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Bale at left was dropped on edge from great height. The pulp gave, but strap and seals held.

Longview Fibre Uses Signode for Baling Kraft Pulp and Liner

The pulp is piled in units 20" high, 100 lb. pressure is applied and the bands are tightened and sealed.

This is but one of hundreds of different applications in the Paper Industry. If you are not already using Signode Tensional Steel Strapping it will pay you to investigate. Ask us to show you what we are doing for other Paper Mills.

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We also manufacture round wire tensional reinforcements, all forms of nailed-on strapping, wire tying machines, pail clasps, clutch nails, tag fasteners, etc. Write for general catalog.

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Towel Interfolding Machines

NAPKIN FOLDERS
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New Papers

Writing—	
White rag	15–40
White sulphite	9–30
Colored rag	15–40
Colored sulphite	8–30
Ledger—	
White rag	16–40
White sulphite	10–30
Colored sulphite	10–30
Colored rag	15–40
Bond—	
White rag	16–40
White sulphite	8–30
Colored sulphite	8–30
Colored rag	15–40
Book—	
No. 1 S. & S. C.	5.75– 8.00
Machine finished	5.50– 8.00
English finish	5.50– 8.00
Coated and enameled	7.50–12.00
Lithograph, M. F.	7.50–12.00
Newsprint—	
Rolls, contract, per ton, delivered New York	62.00–
Rolls, transient, per ton, delivered New York	62.00–
Sheets, per ton, delivered New York	67.00–
Side runs, per ton, delivered New York	47.00–52.00
Cover stock—	
Coated, both sides	–10.25
Coated, one side	–10.15
Tissue—	
No. 1 white, 20x30	.75– .90
No. 2 white, 24x36	.75– .90
No. 1 Manila, 24x36	.75– .80
Kraft	.95–1.10
Wrapping—	
No. 1 kraft	6.00–6.50
No. 2 kraft	5.00–5.50
Southern kraft	4.75–5.50
Boards—	**New York and Chicago**
Solid news	40.00–45.00
Straw	50.00–55.00
Plain chip	32.50–35.00
White coated chip	50.00–55.00
Manila coated chip	45.00–50.00
Binder's board	65.00–70.00

Chemicals

(Continued from page 1477)

Rosin, Grade E	9.35 – 9.50
Satin white	2.00 – 2.25
Soda ash, 58 per cent light (bags)	1.32½– ....
Starch, papermakers', in bags	3.82 – ....
Talc (ton)	16.00 –18.00

A large and representative conference of manufacturers, distributors and users of Gummed Paper Sealing Tape, held under the auspices of the Division of Simplified Practice, Department of Commerce, at the Congress Hotel, Chicago, Ill., on October 7, approved a simplified schedule of stock sizes for gummed paper sealing tape, according to an announcement made by the U. S. Bureau of Standards. The recommendation is to be considered in effect February 1, 1930, subject to the approval of all interests.

Envelope Containers Dutiable

The efforts of importers of envelopes used for the lithographed greeting cards and similar lithographed merchandise to import such envelopes free of duty were the subject of a test case before the United States Customs Court last month. The importers claimed that the envelopes were free of duty as containers of lithographed merchandise, under a proviso of the traffic law for free admission of such containers. The Import Committee, however, co-operated with the Government by securing witnesses who testified that the envelopes were ordinary commercial envelopes, could be used for any purpose for which envelopes are used for mailing, and therefore they should not come under the provision for containers. The case was a test of this issue involving hundreds of importations.

Several important court decisions sustaining the contentions of the Import Committee have been rendered recently. Among them are:

Manila side runs held to be dutiable, not free of duty as standard newsprint as claimed by importer.

Efforts of a Baltimore importer to secure free entry of pulp board under the claim that it was duty free as pulp were overruled by the decision of the United States Customs Court that the shipment was dutiable as pulp board at 10 per cent.

Importers who had protested to the customs court against rulings by customs officials adverse to their contentions have finally abandoned cases involving the classification of book paper claimed to be standard newsprint, photographic paper, and writing paper held to be subject to an additional duty because of fancy finish.

First Anniversary of Cornstalk Products Plant

To commemorate the production on October 19, 1928, of the first cornstalk paper for commercial use from pulp made in the Danville, Ill. plant of the Cornstalk Products Company, the Danville Chamber of Commerce has issued an anniversary number of its official organ, "Greater Danville." The envelopes in which this issue was mailed were made from the paper of the first run of that plant.

This special number is entirely devoted to interesting articles featuring the expansion of the Cornstalk Products Company's plant, and timely comment on farm waste utilization.

Changes and additions to the Danville plant since it began operation a year ago are said to have cost approximately three-quarters of a million dollars and have more than quadrupled the capacity of the pulp mill. The output from present equipment will be 50 to 60 tons a day of papermaking pulp and 12 to 15 tons of vegetable carbon black for use in ink, paint, etc.

G. H. Lentz, Professor of Forest Extension at the New York State College of Forestry and for six years Director of the College of Forestry Camp on Cranberry Lake, has resigned in order to accept an appointment with the United States Forest Service. He submitted his resignation June 24 to become effective December 1. The appointment which he has accepted in the Forest Service is in the Branch of Research as silviculturist at the Southern Forest Experiment Station of New Orleans. An erosion study in connection with flood control is being undertaken by the Southern Station and Prof. Lentz will be assigned to this problem.

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"HAFSLUND BEAR"
Bleached Sulphite

"FORSHAGA"
Bleached Sulphite

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Extra Strong Kraft

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Extra Strong Kraft

Fresh Monthly Shipments—No Closed Winter Season

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Dealers in
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Agents for Kellner Partington Paper Pulp Co., Ltd.
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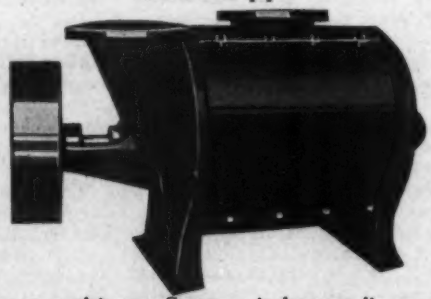
APMEW Timken Universal Screen
for
Paper and Pulp
17 Sold in Europe, Canada and U.S.A. during last 6 months of 1928

Produces finest quality Paper and Pulp. 90 tons daily capacity groundwood with .065" plates. 20 H.P. consumed for 90 tons production. .8% to 1% Screening Consistency. Tailings under control.
No mixing of air. No foaming. No lumps. No spilling. No shower pipes.



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Unbleached Sulphite 50 tons daily
Kraft Pulp 50 tons daily

Our pulp is made from Canadian Spruce
We ship in Sheets, baled

BATHURST, NEW BRUNSWICK, CANADA

EXPORTS

Exports of paper from the United States in August showed a slight decrease in value as compared with shipments to foreign countries in the preceding month, but were well above the exportations in the similar month last year, according to official statistics compiled and issued by the U. S. Department of Commerce in Washington. August exports of all grades of paper and products reached a total value of $3,0[illegible]8,478, compared with shipments valued at $3,147,717 in July of this year and $2,748,111 in August last year. Exports during the eight months of the current year were valued at [illegible], recording an appreciable gain over the exports at $20,543,169 in the same period a year ago.

Exports of newsprint paper in August amounted to 2,156,617 pounds, valued at $81,752, compared with 2,738,222 pounds, valued at $117,536 exported in the preceding month, and 1,919,680 pounds of a value of $73,707 in August, 1928. Newsprint exports during the first eight months of this year totaled 21,925,637 pounds, valued at $830,031, against 14,785,971 pounds of a value of $565,120 in the same period of last year. The largest exports this year in this period were to the Philippine Islands, 6,365,373 pounds, and to South America, 6,146,568 pounds.

Wrapping paper exports from the U. S. in August were 3,260,825 pounds of a declared value of $216,938, contrasted with 3,368,911 pounds of a value of $240,467 in the preceding month, and 2,826,538 pounds of a value of $196,603 in August a year ago. Exports of writing paper in August were valued at $222,882 showing an increase over the shipments in the same month last year of a value of $203,300. Tissue and crepe paper exports were valued at $114,653 in August, compared with $109,035 in the same month of 1928, while sheathing and building paper exports climbed in value from $42,611 in August last year to $63,127 in the same month this year.

Exports of boxboard in August reached a value of $318,916, against only $90,762 in the similar month a year ago, while other paperboard and strawboard exports were valued at $178,701 in August, compared with $391,473 a year ago.

IMPORTS

Wood Pulp

While it is reported generally that demand for imported chemical wood pulp has quieted to some extent, it is also stated by New York importers and agents that buying by paper and board manufacturers is proceeding in fair volume, and that the market is far from slow. Indications are that most consumers have covered their expected requirements over the next few months to a degree where they can well afford to hold off placing additional orders for a time, so that in many quarters there is not the eagerness to enter purchasing commitments as there was earlier in the pulp-buying season.

However, neither are producers pressing to sell pulp, with the result that the narrower call for supplies is offset in good measure, and prices of nearly all the major classes of foreign pulp are holding steady decidedly. It is now agreed generally that pulp mills in Scandinavia and elsewhere in Europe are fully sold out for the remainder of this year, and that they have disposed of the bulk of their production during the first half of 1930, as well as having made extensive commitments for shipments right on through next year. Statistically, the market is in a strong position, which has been brought about not alone by the fairly heavy buying by American consumers a comparatively long period ahead, but also by exceptionally large takings of pulp on the part of British and Continental paper mills. All reports say that there has been a big increase in newsprint and other paper production in Europe, which has been reflected appreciably in a broader demand for pulp on the other side of the Atlantic.

The strongest item in the chemical pulp market at present, as has been the case for some while, is strong unbleached sulphite. Offered supplies of such pulp are admittedly slim, and sellers are insisting on firm prices. Prime grades of strong sulphite are fetching 2.90 to 3 cents a pound ex dock New York or other American Atlantic ports, and it is said to be very doubtful whether purchases of any prime quality can be effected at less than 2.85 cents. Prime easy bleaching sulphite is firm also on a quotable range of 2.90 to 3.15 cents ex dock New York, while half-prime unbleached is around a price basis of 2.70 cents. Bleached sulphite is reported available at 3.65 to 3.75 cents a pound on the dock at American Atlantic ports for prime grade, though quotations range up to 4 and 4.25 cents on some mill brands. Standard Swedish kraft pulp of prime grade is quoted at 2.45 to 2.50 cents ex dock, with now and then some little concession allowed by sellers, particularly when tonnage lots are involved. Imported groundwood is quoted at $35 per short ton for dry and $33 for moist pulp, ex dock New York.

For the first time in several months, importations of chemical wood pulp into the United States recorded a decrease in August as compared with the preceding month, the total imports of all grades of chemical pulp during August reaching 127,234 long tons, valued at $7,303,416, contrasted with 143,915 tons of a declared value of $8,182,448 in July this year, and 117,717 tons of a value of $6,891,970 in August a year ago, according to official U. S. Department of Commerce statistics. The August imports brought the total for the first eight months of 1929 up to 945,031 long tons, giving a monthly average of 118,128 tons, compared with 103,738 tons average monthly in the corresponding period a year ago. In other words, chemical pulp imports this year have been some 115,000 tons larger in eight months than in the similar time of 1928. Groundwood imports in August were 22,081 long tons, valued at $543,973, against 16,718 tons of a value of $428,234 in the preceding month, and making a total for the first eight months of the current year of 150,327 tons, contrasted with 139,789 tons in the same period a year ago.

Current market quotations ex dock New York, and receipts at the port of New York during October, 1929, follow:

Bleached sulphite, No. 1	3.65– 4.25
Unbleached sulphite, strong No. 1	2.85– 3.00
Unbleached sulphite, No. 2	2.65– 2.85
Easy bleaching sulphite	2.90– 3.15
Mitscherlich unbleached, genuine	3.00– 3.25
Mitscherlich unbleached, ordinary	2.75– 3.00
Kraft, standard Swedish	2.45– 2.50
Groundwood, per ton (dry)	35.00–36.00

E. M. Sergeant Co., 599 bls. from Gothenburg; Johaneson, Wales & Sparre, 299 bls. from Gothenburg and 425 Soraker; Parsons & Whittemore, 309 bls. from Gothenburg; Lagerloef Trading Co., 160 bls. from Helsingfors; Atterbury Bros., 2,000 bls. from Oslo; Chemical Bank & Trust Co., 180 bls. from Oslo and 506 Hamburg; J. Andersen & Co., 2,160 bls. from Oslo, 13,640 Stugsund and 300 Svartvik; Bulkley, Dunton & Co., 600 bls. from Gothenburg, 7,154 Stugsund, 1,750 Gefle and 4,650 Hernosand; Kidder Peabody Acceptance Corp., 127 bls. from Gothenburg; Price & Pierce, Ltd., 375 bls. from Gothenburg; Irving Trust Co., 127 bls. from Hamburg;

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See pages 372 and 373 in the 1929 Paper and Pulp Mill Catalogue

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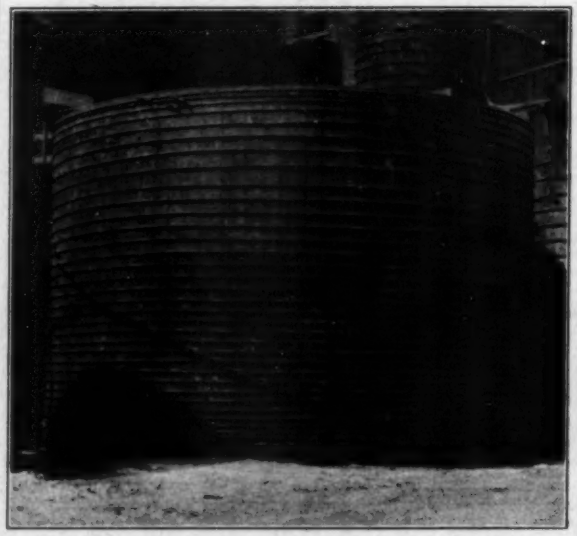

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Castle & Overton, 6,937 bls. from Hamburg; Pagel, Horton & Co., 1,200 bls. from Stugsund, 3,000 Gefle and 1,200 Pitea; M. Gottesman & Co., 1,000 bls. from Rotterdam; O. E. Klaer, 800 bls. from Oslo and 750 Greaker; Scandinavian Pulp Agency, 2,725 bls. from Fagervik; Perkins-Goodwin Co., 550 bls. from Fagervik; Acer, McLernon & Co., 8,301 bls. from Chandler; National City Bank, 1,000 bls. from Oslo; Order, 1,225 bls. from Hamburg, 500 Oslo, 1,950 Viborg and 640 Rauma.

Paper Stock

Imports of papermaking rags into the United States in August amounted to 38,296,205 pounds, valued at $856,450, compared with 41,387,217 pounds of a value of $862,276 in the preceding month, and bringing the total for the first eight months of this year up to 291,413,266 pounds of a declared value of $5,987,084, showing a slight decrease contrasted with the 293,393,885 pounds of a value of $5,374,783 imported in the similar period last year. Imports of waste bagging and waste paper in the first eight months of the current year were 99,022,258 pounds, against 101,210,740 pounds in the same period last year, while imports of old rope and miscellaneous paper stock in the same time were 77,907,912 pounds, compared with 41,453,068 pounds a year ago.

Arrivals of papermaking materials during October were fairly large at the port of New York. Some big shipments of rags were received, and old rope and bagging receipts were about up to normal tonnage. Imports of all kinds of paper stock excepting wood pulp at the port of New York during October, these data being taken from manifests of steamers reaching that port during the month, were as follows:

Old Rope—Brown Bros. & Co., 321 bls. and 734 coils; Ellerman's Wilson Line, 23 bls. and 94 coils; J. C. Van Itallie & Co., 23 coils; Darmstadt, Scott & Courtney, 15 bls.; International Purchasing Co., 461 coils and 207 bls.; S. Birkenstein & Sons, 30 bls. and 92 coils; United Fruit Co., 4 bls.; William Steck & Co., 64 coils; W. Schall & Co., 37 bls.; N. E. Berzen, 259 coils and 58 bls.; French-American Banking Corp., 27 bls.; Anglo-South American Trust Co., 108 coils; R. M. Gray, Inc., 13 coils; Liberty National Bank, 35 bls.; Order, 25 coils.

Old Bagging—Katzenstein & Keene, 139 bls.; Guaranty Trust Co., 31 bls.; W. Schall & Co., 159 bls.; Liberty National Bank, 63 bls.; International Purchasing Co., 50 bls.; Banca Commerciale Italiana Trust Co., 594 bls.; Overton & Co., 921 bls.; E. Butterworth & Co., 48 bls.; Kidder Peabody Acceptance Corp., 54 bls.; Baring Bros. & Co., 46 bls.; S. Birkenstein & Sons, 167 bls.; Anglo-South American Trust Co., 42 bls.; Castle & Overton, 51 bls.; Order, 504 bls.

Rags—Darmstadt, Scott & Courtney, 877 bls.; Daniel I. Murphy, Inc., 49 bls.; Victor Galaup, Inc., 399 bls.; Castle & Overton, 1,399 bls.; Centaur Paper Mills Supply Co., 6 bls.; Ernst Mayer, 71 bls.; Fritz Stern, 304 bls.; David Galloway, Inc., 24 bls.; Hoffman Lion Mills, 39 bls.; Cotton Products Co., 20 bls.; J. Cohen & Son, 450 bls.; Harmon G. Lichtenstein, 86 bls.; George W. Millar & Co., 392 bls.; Albany Fiber Co., 11 bls.; J. Reiss & Co., 37 bls.; Jaffe Products Co., 24 bls.; S. Birkenstein & Sons, 228 bls.; Paul Berlowitz, 130 bls.; Mercer Graded Stock Co., 16 bls.; Katzenstein & Keene, 81 bls.; International Acceptance Bank, 52 bls.; Daniel M. Hicks, Inc., 109 bls.; Atlas Waste Mfg. Co., 27 bls.; W. Lowenthal & Co., 14 bls.; M. A. De Leon, 43 bls.; American Sanitary Rag Co., 150 bls.; American Express Co., 22 bls.; Hibernia Trust Co., 57 bls.; Equitable Trust Co., 8,722 bls.; Guaranty Trust Co., 17 bls.; New York Trust Co., 86 bls.; Manufacturers Trust Co., 340 bls.; French-American Banking Corp., 373 bls.; Fidelity Trust Co., 490 bls.; Chase National Bank, 4 bls.; Bank of the Manhattan Co., 24 bls.; Chemical Bank & Trust Co., 24 bls.; Irving Trust Co., 109 bls.; National City Bank, 331 bls.; Banca Commerciale Italiana Trust Co., 668 bls.; Merchants National Bank of Boston, 40 bls.; Bank of New York & Trust Co., 61 bls.; C. R. Spence & Co., 178 bls.; C. B. Richard & Co., 499 bls.; Kidder Peabody Acceptance Corp., 187 bls.; Amsinck, Sonne & Co., 216 bls.; Baring Bros. & Co., 295 bls.; Flintkote Co., 168 bls.; Brown Bros. & Co., 480 bls.; A. W. Fenton, Inc., 1,000 bls.; W. Schall & Co., 579 bls.; Gallagher & Ascher, 99 bls.; American Overocean Co., 64 bls.; Porto Rican Express Co., 31 bls.; Amtorg Trading Co., 1,381 bls.; Order, 2,641 bls.

Miscellaneous—Castle & Overton, 362 bls.; George W. Millar & Co., 109 bls.; Darmstadt, Scott & Courtney, 190 bls.; Daniel M. Hicks, Inc., 1,049 bls.; E. J. Keller Co., 110 bls.; J. Cohen & Son, 41 bls.; Harmon G. Lichtenstein, 43 bls.; R. M. Gray, Inc., 20 bls.; Irving Trust Co., 190 bls.; Equitable Trust Co., 133 bls.; Chemical Bank & Trust Co., 29 bls.; Fidelity Trust Co., 204 bls.; Bank of the Manhattan Co., 93 bls.; Bank of New York & Trust Co., 49 bls.; Banca Commerciale Italiana Trust Co., 27 bls.; Perry, Ryer & Co., 84 bls.; Milton Snedeker Corp., 52 bls.; American Express Co., 8 bls.; Brown Bros. & Co., 242 bls.; Baring Bros. & Co., 634 bls.; C. R. Spence & Co., 22 bls.; T. D. Downing & Co., 125 bls.; Order, 424 bls.

Paper

Importations of paper into the United States in August last showed a slight decrease in total value as compared with the preceding month, but a gain over the imports in the corresponding month last year, according to official figures compiled by the U. S. Department of Commerce. August imports reached a value of $13,985,751, contrasted with $14,151,729 in July this year, and $12,933,650 in August, 1928. Imports during the first eight months of this year amounted in value to $105,443,734, against $101,518,008 in

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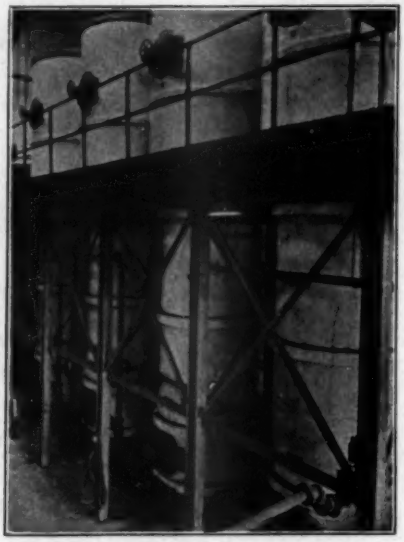

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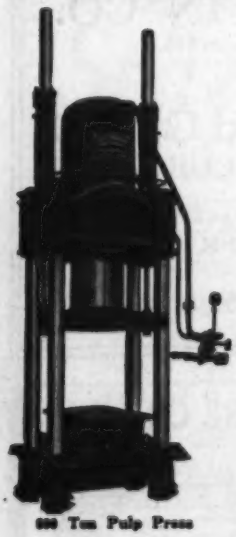

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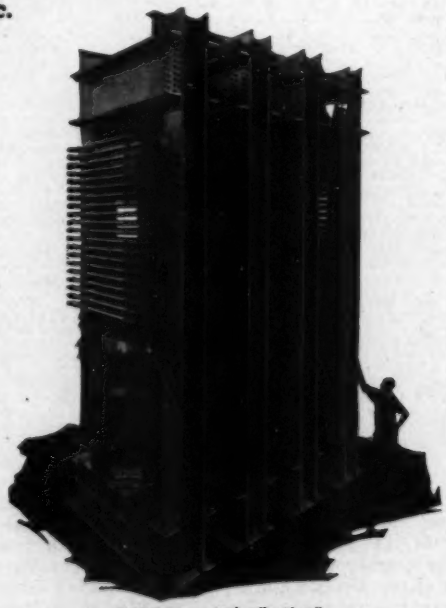

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the similar period of 1928. The bulk of these imports was of course newsprint, imports of which were valued at $12,322,586 in August this year, and $93,131,571 in the first eight months of 1929, compared with $90,220,497 in the same time last year.

Paper imports in October were about on an average, judging from receipts through the port of New York. While official statistics are not yet available, following are the arrivals at the port of New York last month, these data being taken from manifests of vessels reaching that port during October:

Printing—H. Reeve Angel & Co., 519 reels from Helsingfors and 616 reels Kotka; Jay Thorpe, Inc., 19 cs. from Havre; E. Dietzgen & Co., 86 cs. from Rotterdam; Perkins-Goodwin Co., 924 reels from Hamburg; C. Steiner, 23 cs. from Bremen and 8 cs. Rotterdam; Stora Kopparberg Corp., 198 reels from Gothenburg; W. A. Foster, 11 bls. from Glasgow; Keuffel & Esser Co., 276 rolls from Hamburg; Robert Wilson Paper Corp., 11 bls. from Glasgow; Acme Letter File Co., 6 cs. from Trieste; National City Bank, 66 bls. from Hamburg; Bank of Montreal, 10,156 rolls from Corner Brook; Martin & Bechtold, 21 cs. from Bremen; Hudson Trading Co., 287 reels from Ortviken; Journal of Commerce, 66 reels from Kotka and 65 reels Helsingfors; Walker Goulard Plehn Co., 82 cs. from Hamburg; P. Puttmann, 32 cs. from Antwerp; E. E. Lloyd Paper Co., 3 cs. from Genoa; Order, 1,991 reels, 155 cs. and 214 bls. from Bremen and 32 rolls and 25 cs. from Hamburg.

Wrapping—Sylvania Industrial Co., 194 cs. from Antwerp; Borregaard Co., 1,587 reels and 263 bls. from Gothenburg; Union Paper & Twine Co., 53 reels from Gothenburg; Arkell Safety Bag Co., 971 reels from Gothenburg; Bernhard Ullmann & Co., 12 reels and 42 bls. from Gothenburg; Crepe Kraft Co., 210 reels and 5 bls. from Gothenburg; Yardley & Co., 8 cs. from London; F. C. Strype, 24 cs. from Rotterdam and 2 cs. Antwerp; Stelz Book Binding Co., 8 cs. from Antwerp; M. Harrison, 58 cs. from Hamburg; Thomas Barrett & Son, 124 bls. from Gothenburg; D. S. Walton & Co., 242 rolls from Gothenburg; Atlantic Forwarding Co., 12 cs. from Hamburg; E. Dietzgen & Co., 62 cs. from Rotterdam; C. G. Winans & Co., 608 reels and 32 bls. from Gothenburg; Chatfield & Woods, 22 bls. from Gothenburg; C. J. O'Shea, 24 reels from Gothenburg; Order, 19 cs. from Hamburg.

Cigarette—P. J. Schweitzer, Inc., 327 cs. from Marseilles and 56 cs. Havre; Standard Products Corp., 114 cs. from Southampton and 342 cs. Havre; American Tobacco Co., 700 cs. from Bordeaux; British-American Tobacco Co., 14 cs. from Southampton and 2 cs. Havre; DeMauduit Paper Corp., 474 cs. from Havre and 652 cs. St. Nazaire; M. Spiegel & Sons, 33 cs. from Genoa; Heemsoth, Basse & Co., 13 cs. from Bordeaux; Order, 128 cs. from Marseilles and 50 cs. Genoa.

Writing—Guibont Freres & Co., 22 cs. from Southampton; J. Beckhardt & Co., 21 cs. from Bremen; Maison Kadri Bros., 3 cs. from Havre; Distinctive Writing Paper Co., 4 cs. from Southampton and 7 cs. Havre; Eleto Co., 4 cs from Hamburg; Coenca-Morrison Co., 6 cs. from Havre; J. A. Hearn & Co., 2 cs. from Havre.

Filter—H. Reeve Angel & Co., 66 pkgs. from Southampton and 38 cs. London; E. Fougera & Co., 92 cs. from Bordeaux; Blackman & Blackman, 20 bls. from Bordeaux; C. Sleicher & Scholl Co., 7 cs. from Hamburg; J. Manheimer, 122 bls. from Southampton; A. Giese & Son, 9 cs. from Hamburg.

Tissue—Parsons & Whittemore, 95 cs. from Liverpool; Meadows, Wye & Co., 6 cs. from Liverpool; F. C. Strype, 72 cs. from Helsingfors and 30 cs. Genoa; G. W. Sheldon & Co., 8 cs. from London; Schenkers, Inc., 237 cs. from Hamburg; J. Marks, 3 cs. from Hamburg; Milton Snedeker Corp., 28 cs. from Hamburg; D. C. Andrews & Co., 5 cs. from Liverpool; A. W. Fenton, Inc., 3 cs. from Liverpool.

Drawing—Keuffel & Esser Co., 5 cs. from London, 151 cs. Hamburg and 19 cs. Rotterdam; H. Reeve Angel & Co., 12 cs. from London.

Hanging—A. C. Dodman, Jr., Inc., 112 cs. from Liverpool, 3 bls. London, 25 bls. Southampton and 9 bls. Bremen; C. A. Haynes & Co., 20 bls. from Liverpool and 45 bls. London; F. J. Emmerich & Co., 42 bls. from Hamburg, 14 bls. Liverpool and 2 bls. London; F. A. Binder, 7 bls. from Bremen; Irving Trust Co., 65 cs. from Hamburg; Kensington Wallpaper Co., 20 pkgs. from Havre; J. E. Bernard & Co., 55 bls. from Hamburg; R. F. Downing & Co., 14 cs. from London and 4 cs. Southampton; Schmidt, Pritchard & Co., 7 bls. from Bremen; J. W. Hampton, Jr., & Co., 5 cs. from Havre.

Photo—Gevaert Co. of America, 300 cs. from Antwerp; J. H. Schroeder Banking Corp., 6 cs. from Bremen; Globe Shipping Co., 882 cs. from Bremen; J. J. Gavin & Co., 5 cs. from Southampton and 2 cs. Bremen; Order, 24 cs. from Hamburg.

Board—C. H. Powell & Co., 162 reels from Rotterdam; Moore & McCormick, 102 bls. from Stockholm; Hensel, Bruckman & Lorbacher, 80 bls. from Rotterdam; Fibre Products Mfg. Co., 7 bls. from Gothenburg; Standard Trunk Mfg. Co., 21 bls. from Gothenburg; Lagerloef Trading Co., 247 reels, 55 cs. and 285 bls. Kotka.

Miscellaneous—Japan Paper Co., 68 cs. from Havre, 7 cs. London, 79 cs. Genoa and 3 cs. Southampton; Whiting-Patterson Co., 20 cs. from Southampton; L. Duysters, 8 cs. from Antwerp; Tice & Lynch, 5 cs. from London and 2 cs. Havre; J. J. Shore & Co., 25 cs. from Bremen and 15 cs. Hamburg; J. Beckhardt & Co., 25 cs. from Bremen, 10 cs. Southampton; and 8 cs. Havre; S. Gilbert, 42 cs. from Bremen; F. Murray Hill, Inc., 17 cs. from Bremen; Central Hanover Bank & Trust Co., 388 cs. from Hamburg; D. C. Andrews & Co., 6 bls. from Hamburg; Yokohama Specia Bank, 7 cs. from Osaka; Hensel, Bruckman & Lorbacher, 17 cs. from Bremen, 15 cs. Havre and 19 cs. Hamburg; Dingelstedt & Co., 2 cs. from Bremen; Bank of the Manhattan Co., 11 cs. from Rotterdam; National City Bank, 23 cs. from Rotterdam; W. L. Haas, 17 cs. from Rotterdam; E. Henningson, 7 bls. from Bremen; Borden & Riley Paper Co., 11 cs. from Antwerp; Quality Art Novelty Co., 61 cs. from Hamburg; W. J. Byrnes & Co., 10 cs. from Southampton, 8 cs. Havre and 6 cs. Liverpool; Steffens, Jones & Co., 2 cs. from Hamburg; Keller-Dorian Paper Co., 158 cs. from Havre and 7 cs. Southampton; Canson & Montgolfer, 43 cs. from Havre; P. H. Petry & Co., 39 cs. from Havre; F. B. Vandegrift & Co., 2 cs. from Havre; Stern, Stiner & Co., 2 bls. from Hamburg; F. C.

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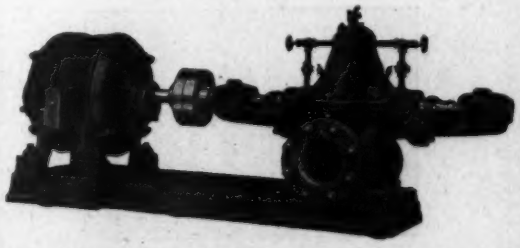

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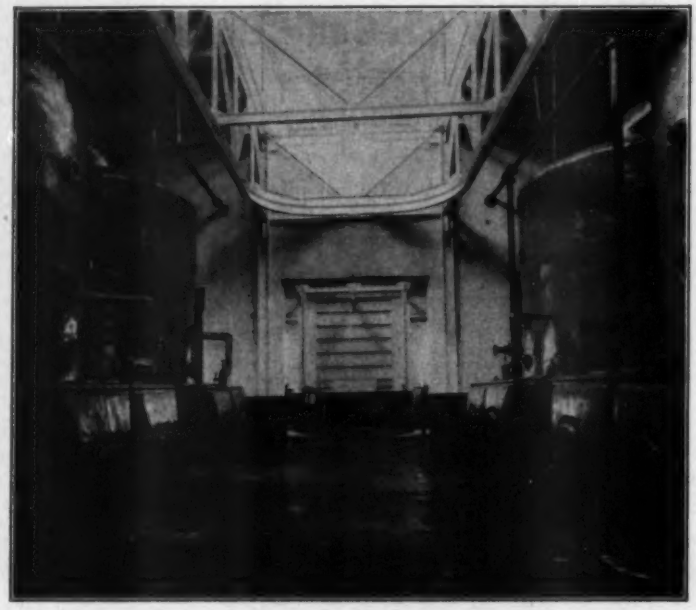

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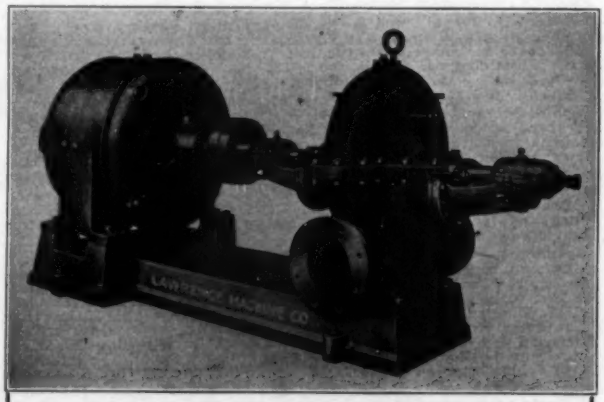
It is easy to avoid this trouble with the Hayton Go-Devil. This instrument cleans pipe lines mechanically with no trouble and in a short time. Just insert the Go-Devil in the pipe, turn on the fresh water and out the other end comes all of the slime.

The propeller-like blades of the Go-Devil revolve against the pipe walls scraping off the fungus, leaving a clean line. By means of a strong flexible spring the bends are negotiated with ease.

We will gladly furnish any further information you may desire

HAYTON PUMP AND BLOWER CO.
Appleton, Wisconsin



LAWRENCE Centrifugal turbine pump, single stage, horizontally split casing, double suction enclosed impeller, high pressure pumps for water supply service, designed and built in all sizes to meet all conditions. Direct connected to electric motors, steam turbines, gasoline engines, etc. Material and workmanship of the highest class. Please submit to our engineering department your specifications. Prompt service rendered at all times.

LAWRENCE MACHINE & PUMP CO.
LAWRENCE, MASS.
Manufacturer of "Lawrence" Pump, Centrifugal Pumping Machinery, Vertical Steam Engines, Contractors for Special Machinery

Strype, 4 cs. from Rotterdam; F. L. Kraemer & Co., 32 cs. from Bremen, 5 cs. London and 3 cs. Havre; Process Corp., 18 cs. from Bremen; C. A. Redden, 18 reels from London; B. F. Drakenfeld & Co., 10 cs. from Liverpool; Fuld & Co., 27 cs. from Hamburg; E. Dietzgen & Co., 47 cs. from Hamburg; P. C. Zuhlke, 4 cs. from Antwerp; J. W. Hampton, Jr., & Co., 2 cs. from London; A. W. Puttman, 20 cs. from Canton; W. A. Foster, 9 cs. from Southampton and 28 bls. Glasgow; M. J. Corbett & Co., 13 cs. from Bremen; Van Oppen & Co., 78 cs. from Genoa; American Banknote Co., 2 cs. from Genoa; E. Daiber, 3 cs. from Antwerp; Pelican Works, 17 cs. from Bremen; Guaranty Trust Co., 10 cs. from Bremen; W. Bersch, 5 cs. from Bremen; Pacific National Bank, 15 cs. from Hamburg; R. F. Downing & Co., 7 cs. from Havre; Norton, Lilly & Co., 31 cs. from Hull; F. G. Teipel, 7 bls. from Rotterdam; International Forwarding Co., 70 cs. from Antwerp, 43 cs. Hamburg and 8 cs. Rotterdam; Globe Shipping Co., 31 cs. from Southampton, 103 cs. Rotterdam, 25 bls. Hamburg, 10 cs. Bremen and 6 cs. Havre; American Express Co., 393 cs. from Hamburg and 3 cs. Bremen; International Clearing House, 12 cs. from Havre; Universal Carloading & Distributing Co., 10 cs. from Bremen; Hudson Forwarding Co., 2 cs. from Havre; Independent Forwarding Co., 10 bls. from London.

Paper Permanence to be Discussed at Annual Tappi Meeting

A discussion of factors in paper permanence will take place at the annual meeting of the Technical Association of the Pulp and Paper Industry in New York next February under the joint auspices of the Cellulose Committee and the Committee on Fine Papers. We are indebted to Dr. Jessie E. Minor, of Springfield, Mass., for the accompanying outline of the program:

I—Durability versus permanence of paper: (1) Definition and interrelation of the two factors; (2) trade attitude, practices, theories, etc.; (3) present methods of testing therefor, with a critical discussion of value.

II—Artificial aging as a means of determining permanence: (1) Opinions and experiences of leading paper users with reference to artificial aging for permanence; (2) relative values and theoretical errors in different methods used for aging.

III—Literature review of work done on paper permanence from the outline compiled by R. P. Walton of New York Public Library, 1929.

IV—Fiber differences from the standpoint of (1) Chemical composition and reactions; (2) fiber structure and physical properties; (3) treatment in papermaking, as cleansing, sizing, cutting, etc.; (4) paper differences.

V—Chemical tests for permanence and their interpretation: (1) Acidity by titration or pH value; (2) rosin size; (3) impurities, as chlorides, iron, sulphates, etc.; (4) copper number; (5) viscosity; (6) alpha content; (7) soda soluble.

In each case explanations will be called for concerning the method chosen, the reason therefor, the value of the test to other industries and what it might mean to the paper industry.

VI—Summary.

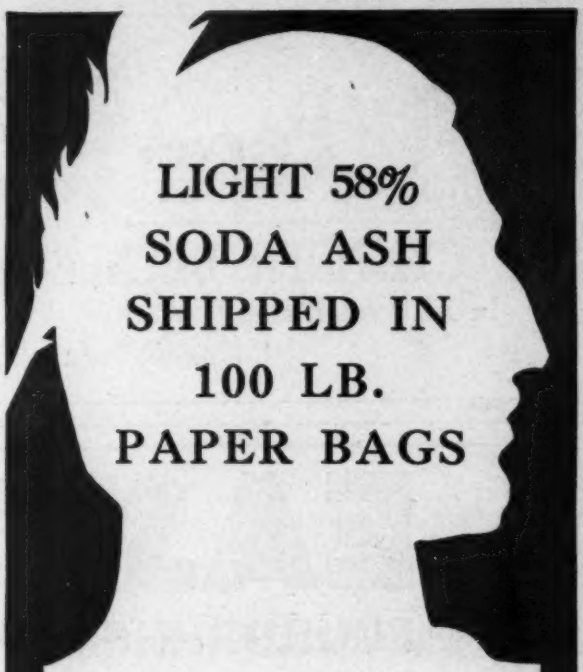
Safety Record Made by Bird Plant

In Bird & Sons' 1928 inter-plant safety contest, the Roofing Plant was awarded the company's Safety Shield after having gone a full year without a lost-time accident. This plant recently completed the best no-accident record ever made by any one of Bird & Sons' plants, having gone 697 calendar days, or a total of 1,033,896 man-hours worked, with an average of 235 men.

There is, however, another side to the story. The Roofing Plant lacked one month of completing its second year without an accident, which would have again entitled it to the Safety Shield, but which on account of its broken record was passed on to the Box Shop.

The ceremonies which attended the passing of this shield, although a travesty—a cortege of black-robed workers from the Roofing Plant following the shield which reposed in a coffin—were impressive, and executives of the company took part in the program, giving safety talks, congratulatory remarks, and admonitions to "be careful."

President P. R. Allen of Bird & Sons, in his safety message published in the October issue of Bird's Review said: "We must become 'safety-minded.' We must become selfish and unselfish at the same time. We must be selfish in our desire to play safe; unselfish in our desire to help the other fellow to play safe. It is the most worthwhile single thing we have to do in our day's work in all of our plants."



LIGHT 58% SODA ASH SHIPPED IN 100 LB. PAPER BAGS

WYANDOTTE Soda Ash for the paper trade is now packed in the famous Taggart-Bates multi-wall sewed-end paper bags. Five layers of special paper end the old dust nuisance—no meshes to let the dust seep through. The smooth paper lining lets the entire contents slide right out.

The new size makes handling easier, quicker, less expensive. You save time, labor. Guaranteed dust-proof, leak-proof, break-proof, moisture-proof.

"Distinguished for its high test and uniform quality"

MICHIGAN ALKALI CO.

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Morey Paper Mill Supply Co.

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CYLINDER DECKLE AND CUTTER WEBBINGS

In All Weights and Widths Immediate Shipment from Stock

Careful—Intelligent—Quick Service

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WIRES

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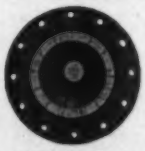
STANDARD-FLANGED-WOOD PIPE

Patent Applied for



Special Collar Flange for Paper Mills.

ADVANTAGES:
Saves Power
No Discoloration
Lasting Qualities
Light in Weight
Cheaper.

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Manufactured by

MICHIGAN PIPE COMPANY

Office and Factory: Bay City, Michigan

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Pipe for conveying—Pure Water, Acid Water, White Water, Sulphite Waste Water, Paper Stock, Ground Wood Pulp, Gases

SPECIAL FITTING FOR ACID WORK WRITE FOR CATALOG

Michigan Pipe for Paper Mills—Liquid Conveyed Touches No Metal

Showing the Special Flange Joint, Light in Weight, Specially Designed for Inside Installations. Easy to Take Apart.

SERVICE:
We maintain experts who will take entire charge of pipe installations if desired.

OVER 100 PAPER MILLS ARE NOW USING STANDARD FLANGED WOOD PIPE INSIDE THEIR MILLS

THE SIGN OF GOOD FELTS

FELTS For All Grades of Paper That Give Satisfaction

MADE BY THE WATERBURY FELT CO.

AT SKANEATELES FALLS, N.Y.

PAPER MAKERS FELTS AND JACKETS

Foreign Trade Opportunities

The following foreign trade opportunities are issued by the Bureau of Foreign and Domestic Commerce of the United States Department of Commerce. Those interested are requested to communicate with the Bureau at its offices in Washington or New York or its branch offices in other cites, in every case mentioning the number of the inquiries referred to.

No. 41010—Bank-note paper for making paper currency, and paper for letterheads. Mukden, China. Agency and purchase desired.

No. 40999—Paper containers for soup paste. Barcelona, Spain. Purchase desired.

No. 40985—Vulcanized fiber. Olomouc, Czechoslovakia. Purchase and agency desired.

No. 41012—Paper mailing tubes. Ottawa, Canada. Purchase and agency desired.

No. 41011—Wall board. Wellington, New Zealand. Agency and purchase desired.

No. 40989—Wall paper. Cochabamba, Bolivia. Agency desired.

No. 41021—Waxed paper cup manufacturing machinery. Santiago, Cuba. Purchase desired.

No. 41101—Wrapping paper, plain, flat and in reels; printing, writing and transparent paper; cardboard, paperboard, etc., and waxed cardboard for food containers. Johannesburg, South Africa. Agency desired.

No. 41112—Felts for papermaking. Dunedin, New Zealand. Agency desired.

No. 41261—Cardboard box manufacturing machinery. Chihuahua, Mexico. Purchase desired.

No. 41198—Containers, food, collapsible or folding type. Rome, Italy. Agency desired.

No. 41204—Vulcanized fiber for trunks. Helsingfors, Finland. Agency desired.

No. 41276—Papers and pasteboards, all kinds. Buenos Aires, Argentina. Agency and purchase desired.

No. 41274—Paper plates, cups and containers. Cape Town, South Africa. Agency desired.

No. 41275—Tissue paper. Cardiff, Wales. Purchase desired.

No. 41292—Wall paper. Dunedin, New Zealand. Purchase and agency desired.

No. 41410—Bank-check paper, bookprint paper, stock-certificate paper, and envelopes. Tel-Aviv, Palestine. Purchase desired.

No. 41381—Paper bottles and cups for milk and other liquid foods. Vienna, Austria. Agency desired.

No. 41361—Cardboard containers for dried peas. Cardiff, Wales. Purchase desired.

No. 41327—Egg-case sections and flats of cardboard. Dublin, Ireland. Agency desired.

No. 41433—Fiberboard shipping containers. Cardiff, Wales. Purchase desired.

No. 41326—Old newspapers, baled, best quality. Semarang, Java. Purchase desired.

No. 41440—Overissue newspapers. Tientsin, China. Agency desired.

No. 41311—Writing paper and envelopes. Alexandria, Egypt. Agency desired.

No. 41459—Bond paper, sulphite, cheap. Christchurch, New Zealand. Purchase desired.

No. 41462—Paper milk bottles. Cario, Egypt. Ag. desired.

No. 41461—Printing paper and paper stock. Havana, Cuba. Agency desired.

New Offices for International Paper Co.

The International Paper Company will soon give up their office quarters in the Pershing Square Building, 100 East Forty-second street, New York, having leased twelve floors from the twenty-fifth to the thirty-sixth inclusive in the News Building, now under construction at 220 East Forty-second street, New York.

The space involves more than 100,000 square feet and will enable the International Paper and Power Company to concentrate its New York offices and provide accommodations for approximately 1,000 employees, when the various subsidiary organizations are taken into account. The offices of the company will be served by five express elevators.

DAYTONS ARE SERVING A WIDESPREAD FIELD

—and serving in many ways!

A heavier furnish, faster beating, and a saving of power! These Dayton claims are proven by figures—and a widespread acceptance has resulted.

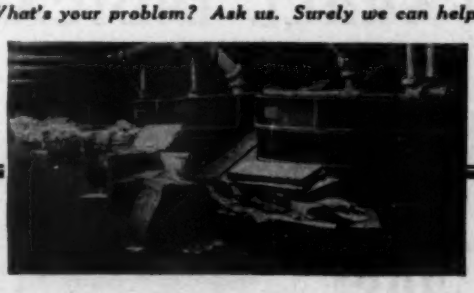
Recent orders for new Dayton High Speed Beaters: Six for Chemical Paper Mfg. Co., Holyoke, Mass.; four for Buckeye Cotton Oil Co., Memphis, Tenn.; two for Jos. Parker & Sons, New Haven, Conn.; three for Western Electric Co., Chicago, Ill.; nine for International Paper Co., Corinth, N. Y.

Recent orders for rebuilding old beaters into Daytons; six for Orono Pulp & Paper Co.; six for Franklin Board & Paper Co.; two for Cheney Pulp & Paper Co.; two for Warren Mfg. Co.; ten for Tarentum Paper Mills Co.; other recent ones, too—wherever high speed production is the order!

Speeding the Manufacture of Paper — Rayon — Insulation

Dayton High Speed Beaters serve many different sorts of mills. For instance—in the manufacture of high grade papers at Chemical Paper Mfg. Co.; at Buckeye Cotton Oil Co. for cotton linters used in rayon making; for insulating paper at Western Electric Co.; and blotting paper at Jos. Parker & Sons.

What's your problem? Ask us. Surely we can help!



The Dayton Beater & Hoist Co., Dayton, Ohio

Eastern Representative, E. K. Mansfield Co., 501 Fifth Ave. New York City

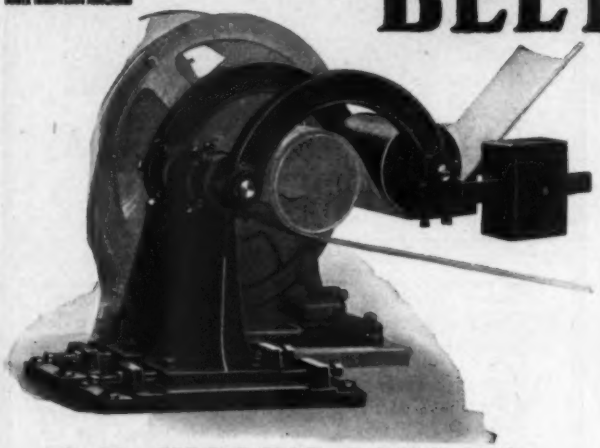
Western Representative, F. H. Godfrey, 415 Lenora St., Seattle, Wash.

DAYTON High Speed Beaters

DRIVE RIGHT

The U. G. Automatic BELT CONTACTOR

Increases Belt Traction



T. B. WOOD'S SONS CO.
CHAMBERSBURG, PA.

NEW ENGLAND BRANCH: **CAMBRIDGE, MASS.**
SOUTHERN BRANCH: **GREENVILLE, S. C.**

Makers of Shafting, Hangers, Collars, Pulleys, Friction Clutches, Ball Bearings, Flexible Couplings, Rope Sheaves, Pillow Blocks, the U G Automatic Belt Contactor, Grooved Pulleys for "V" Belts and Complete "V" Belt Drives.

Wherever installed, the U. G. Automatic Belt Contactor has proven a power-saving, money-saving investment.

It increases tractive effort by wrapping the belt around pulleys, increasing arc of contact and avoiding heavy, destructive initial belt tension; permits the drive being set up on extremely short centers, saving floor space and belt length.

The Contactor automatically compensates for load variations by maintaining a constant tension in slack side of belt under all conditions. Belt can't slip; receives less wear and tear and makes any troublesome drive perform in a perfectly satisfactory manner.

Let us tell you how the U. G. Automatic Belt Contactor can save you belting, floor space, bearings, motors, power and upkeep. There is a size and type for every belt drive.

Ask for Bulletin No. 270

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are made in all sizes up to and including

298"

ON FACE

Farrel Indicating Roll Caliper mounted on Farrel 30" x 184" roll

With this caliper only two adjustments are necessary in changing from one diameter roll to another. Rolls can be calipered to end of face without reversing the instrument.

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{ Birmingham Iron Foundry, Derby, Conn., Est. 1836.